Lower Joseph Project

Wildlife Report

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Date: Sept. 2014

Introduction

This analysis summarizes the terrestrial wildlife species found in the project area and the effects of the alternatives on these species. Rather than addressing all wildlife species, discussions focus on LRMP management indicator species (MIS), threatened, endangered and sensitive (TES) species, LRMP featured species, and landbirds (see individual species lists below). The existing condition is described for each species, group of species, or habitat. Direct, indirect and cumulative effects of alternatives are identified and discussed. This document includes data, methodologies, analyses, conclusions, maps, references and technical documentation used to reach conclusions in this environmental analysis. For more details on the project area and project alternatives, see chapter 2 of the FEIS.

Management Indicator Species (MIS)

The National Forest Management Act (NFMA) directs the Forest Service to provide habitat to maintain viable populations of existing native and desired non-native vertebrate species. Management Indicator Species (MIS) were selected for emphasis in planning, and are assessed during forest plan implementation in order to determine the effects of management activities on their populations and the populations of other species with similar habitat needs. The amount and quality of habitat is used as a proxy for determining the effects of projects on MIS. Table X.X lists the terrestrial species selected as MIS in the Wallowa-Whitman LRMP. All of these MIS have habitat and likely occur in the planning area though habitat for the American marten is limited and presence of this species within the planning area is unknown.

Table [1]. Management Indicator Species identified in the Wallowa-Whitman LRMP.

Species	Representing	Habitat Description	Habitat Present in Analysis Area	Species Present in Analysis Area
Primary cavity excavators (1)	Dead & defective wood habitat	Snags and logs	Yes	Yes
Pileated woodpecker	Old growth and mature forests	Closed canopy, late-seral subalpine, montane and lower montane forests	Yes	Yes
American (pine) marten	Old growth and mature forests	Closed canopy, late-seral subalpine and montane forests	Limited	Unknown
Northern Goshawk	Old growth and mature forests	Subalpine and montane forests, lodgepole pine, post-fire habitat	Yes	Yes
Rocky Mountain Elk	Species commonly hunted	Cover and forage	Yes	Yes

(1)Northern flicker; black-backed, downy, hairy, Lewis', three-toed, and white-headed woodpeckers; red-naped and Williamson's sapsuckers; black-capped, chestnut-backed, and mountain chickadees; and pygmy, red-breasted, and white-breasted nuthatches.

Viability of MIS is being assessed using the historical range of variability (HRV) concept; comparing current amounts and distribution of habitat to historical conditions (Wisdom et al. 2000, Suring et al. 2011). Scientists assume that species are more likely to persist into the future under the conditions that remain most similar to the conditions that they persisted in during the past (Landres et al. 1999, Samson et al. 2002). By managing habitat within HRV it is assumed that adequate habitat will be provided because species survived those levels of habitat in the past to be present today. Thus, if we manage current habitats within the range of historic variability, we are likely to do an adequate job of maintaining population viability for those species that remain. The further current habitat conditions to from HRV, the more likely it is that population viability will be compromised.

Vegetation data used to assess current habitat conditions for American marten and Pileated woodpecker are from the project vegetation layer. The viability analysis completed for the DEIS of the Wallowa Whitman NF is used as reference for …….Wales, Mellen-McClean et al. (2011) Estimates of HRV were derived for the DEIS (Countryman and Justice (2010). HRV for dead wood is from distribution histograms in DecAID (Mellen-McLean, Marcot et al. (2012). Current conditions of snag densities are from GNN data (LEMMA).

Existing Condition habitat departure.

In general in the Moist Forest types the LJCRP area is low in the area of smaller trees, and is currently at the low end of large tree closed canopied habitat. Generally there is an abundance of medium and large-medium trees (10-20" dbh), and habitat >10" dbh with open canopies (<60% canopy closure) as compared to the range of variation.

In the dry forests the LJCRP is below the range of variation in large tree, open canopied habitats, and above the range of variation in the medium and large-medium (10-20" dbh), closed canopied structural stages.

				Range of Variation		
PVG	Tree Size	Canopy Closure	% Existing	Low (%)	**Average (%)**	High (%)
Moist	<10"	open	22	5	**13**	22
Moist	<10"	closed		17	**23**	30
Moist	10-15"	open	14	6	**10**	13
Moist	10-15"	closed	13	5	**9**	12
Moist	15-20"	open	13	2	**4**	7
Moist	15-20"	closed	15	10	**13**	17
Moist	>=20"	open	7	2	**4**	7
Moist	>=20"	closed	17	19	**24**	29
Dry Douglas Fir	<10"	open	20	10	**17**	23
Dry Douglas Fir	<10"	closed	1	-	**2**	5
Dry Douglas Fir	10-15"	open	6	0	**3**	6
Dry Douglas Fir	10-15"	closed	28	-	**0**	2
Dry Douglas Fir	15-20"	open	6	2	**6**	10
Dry Douglas Fir	15-20"	closed	22	-	**2**	4
Dry Douglas Fir	>=20"	open	2	43	**60**	79
Dry Douglas Fir	>=20"	closed	14	0	**10**	22
Dry Grand Fir	<10"	open	8	13	**21**	30
Dry Grand Fir	<10"	closed	2	0	**6**	12
Dry Grand Fir	10-15"	open	3	1	**4**	7
Dry Grand Fir	10-15"	closed	40	-	**2**	4
Dry Grand Fir	15-20"	open	4	4	**8**	13
Dry Grand Fir	15-20"	closed	22	(0)	**3**	7
Dry Grand Fir	>=20"	open	1	28	**44**	61
Dry Grand Fir	>=20"	closed	20	0	**11**	22
Dry Ponderosa Pine	<10"	open	17	13	**23**	33
Dry Ponderosa Pine	<10"	closed	1	-	**1**	5
Dry Ponderosa Pine	10-15"	open	15	1	**4**	7
Dry Ponderosa Pine	10-15"	closed	23	-	**0**	1
Dry Ponderosa Pine	15-20"	open	8	1	**5**	8
Dry Ponderosa Pine	15-20"	closed	22	-	**0**	2
Dry Ponderosa Pine	>=20"	open	2	48	**61**	76
Dry Ponderosa Pine	>=20"	closed	11	-	**6**	15
Xeric Pine	<10"	open	1	23	**38**	53
Xeric Pine	<10"	closed	-	-	**1**	4
Xeric Pine	10-15"	open	25	-	**4**	10
Xeric Pine	10-15"	closed	19	-	**1**	4
Xeric Pine	15-20"	open	30	-	**4**	9
Xeric Pine	15-20"	closed	15	-	**1**	3
Xeric Pine	>=20"	open	6	25	**48**	71
Xeric Pine	>=20"	closed	5	-	**3**	9

						Range of Variation		
PVG	Tree Size	Canopy Closure	% Existing	%A2	%A3	Low (%)	**Average (%)**	High (%)
Moist	<10"	open	22	22	22	5	**13**	22
Moist	<10"	closed				17	**23**	30
Moist	10-15"	open	14	13	13	6	**10**	13
Moist	10-15"	closed	13	8	9	5	**9**	12
Moist	15-20"	open	13	20	17	2	**4**	7
Moist	15-20"	closed	15	7	9	10	**13**	17
Moist	>=20"	open	7	13	13	2	**4**	7
Moist	>=20"	closed	17	17	17	19	**24**	29
Dry Douglas Fir	<10"	open	20	20	20	10	**17**	23
Dry Douglas Fir	<10"	closed	1	1	1	-	**2**	5
Dry Douglas Fir	10-15"	open	6	6	6	0	**3**	6
Dry Douglas Fir	10-15"	closed	28	18	21	-	**0**	2
Dry Douglas Fir	15-20"	open	6	12	12	2	**6**	10
Dry Douglas Fir	15-20"	closed	22	18	18	-	**2**	4
Dry Douglas Fir	>=20"	open	2	10	10	43	**60**	79
Dry Douglas Fir	>=20"	closed	14	14	11	0	**10**	22
Dry Grand Fir	<10"	open	8	8	8	13	**21**	30
Dry Grand Fir	<10"	closed	2	2	2	0	**6**	12
Dry Grand Fir	10-15"	open	3	3	3	1	**4**	7
Dry Grand Fir	10-15"	closed	40	18	33	-	**2**	4
Dry Grand Fir	15-20"	open	4	7	7	4	**8**	13
Dry Grand Fir	15-20"	closed	22	32	25	(0)	**3**	7
Dry Grand Fir	>=20"	open	1	4	4	28	**44**	61
Dry Grand Fir	>=20"	closed	20	26	19	0	**11**	22
Dry Ponderosa Pine	<10"	open	17	17	17	13	**23**	33
Dry Ponderosa Pine	<10"	closed	1	1	1	-	**1**	5
Dry Ponderosa Pine	10-15"	open	15	15	15	1	**4**	7
Dry Ponderosa Pine	10-15"	closed	23	16	18	-	**0**	1
Dry Ponderosa Pine	15-20"	open	8	11	11	1	**5**	8

Dry Ponderosa Pine	15-20"	closed	22	15	16	-	**0**	2
Dry Ponderosa Pine	>=20"	open	2	9	9	48	**61**	76
Dry Ponderosa Pine	>=20"	closed	11	13	10	-	**6**	15
Xeric Pine	<10"	open	1	1	1	23	**38**	53
Xeric Pine	<10"	closed	-	-	-	-	**1**	4
Xeric Pine	10-15"	open	25	25	25	-	**4**	10
Xeric Pine	10-15"	closed	19	6	7	-	**1**	4
Xeric Pine	15-20"	open	30	31	31	-	**4**	9
Xeric Pine	15-20"	closed	15	20	20	-	**1**	3
Xeric Pine	>=20"	open	6	13	13	25	**48**	71
Xeric Pine	>=20"	closed	5	4	3	-	**3**	9

Cavity Excavation Birds – **Dead and defective wood habitat**

Primary cavity excavating birds (woodpeckers) depend on standing and down dead wood for nest, roosting, and foraging. By providing adequate dead wood habitat for these birds, it is assumed that adequate habitat will be provided for other species that rely on dead wood for all or part of their life histories.

Because these MIS where selected to represent dead and defective wood habitat, this analysis and discussion focuses primarily on that habitat component. Additional information on cavity-excavating birds' habitat associations, distribution and life history requirements is summarized in Mellen-McLean (2012a).

A few of the MIS woodpeckers are discussed in more detail due to conservation concerns. The Pileated woodpecker is also MIS for old-growth habitats and further discussed in the Old-Growth Habitat section of this document. More detailed discussion of White-headed and Lewis' Woodpeckers is found in the Sensitive Species section of this document.

Table [2]. Conservation status of cavity-nesting MIS

Species	USFS Sensitive	NatureServe Ranks[1]	
		Global	OR
Black-backed woodpecker		G5	S3
Downy woodpecker		G5	S4
Hairy woodpecker		G5	S4
Lewis's woodpecker	Yes	G4	S2S3
Northern flicker		G5	S5
Northern three-toed woodpecker		G5	S3
Red-naped sapsucker		G5	S4
White-headed woodpecker	Yes	G4	S2S3
Williamson's sapsucker		G5	S4B S3N
Pygmy nuthatch		G5	S4
Red-breasted nuthatch		G5	S5
White-breasted nuthatch		G5	S4
Black-capped chickadee		G5	S5
Chestnut-backed chickadee		G5	S5
Mountain chickadee		G5	S4

[1] NatureServe Ranks: (NatureServe 2010)

- G5 or S5 – Widespread, abundant, secure

- G4 or S4 – Apparently secure
- G3 or S3 – Vulnerable
- G2 or S2 – Imperiled

In general, populations of cavity nesting birds have declined across the Blue Mountains compared to historical conditions, primarily due to reductions in the numbers of large snags (Wisdom, Holthausen et al. 2000). However, of the cavity excavating MIS, Breeding Bird Surveys in Oregon have only detected a significant decrease in populations of the northern flicker between 1966 and 2010 (Sauer, Hines et al. 2011).

Current LRMP direction, as amended by the Eastside Screens, is to maintain snags at 100% of biological potential for all woodpecker species that occur on the Forest throughout the stand rotation. This equates to 2.25 snags/acre ≥12" dbh and 0.14 snags/acre ≥ 20" dbh. Snags can be averaged over an area no larger than 40 acres. Snags should be left in a clumped distribution.

(Rose, Marcot et al. 2001)Rose et al. (2001) report that results of monitoring indicates that the biological potential models are a flawed technique (page 602). New information about the ecology, dynamics, and management of decayed wood has been published since then, and the state of the knowledge continues to change. However, until the LRMP is amended to reflect the new science, 100% biological potential is the minimum number of snags that need to be maintained through the life of the stand rotation.

Integration of the latest science is incorporated into this analysis using DecAID Advisor (version 2.2) (Mellen-McLean et al. 2012) which is an internet-based summary, synthesis, and integration (a "meta-analysis") of the best available science: published scientific literature, research data, wildlife databases, forest inventory databases, and expert judgment and experience. In addition to data showing wildlife use of dead wood, DecAID also contains data showing amounts and sizes of dead wood across the landscape based on vegetation inventory data.

Data from unharvested plots are assessed separately and these data can be used as a **reference condition** to approximate HRV of dead wood. There is debate among professionals on the impact fire exclusion has on stands relative to HRV of dead wood. One caveat to using these data is, "On the eastside in particular, current levels of dead wood may be elevated above historical conditions due to fire suppression and increased mortality, and may be depleted below historical levels in local areas burned by intense fire or subjected to repeated salvage and firewood cutting"(Mellen-McLean, Marcot et al. 2012). Even with this caveat, the data are used in this analysis because: they are still some of the best data available to assess HRV of dead wood, even in eastside dry forests; they are the only available data showing distribution and variation in snag and down wood amounts across the landscape; the data from unharvested stands are in the range of other published data on HRV of dead wood even in the drier vegetation types. For a full discussion see HRV Dead Wood Comparison (Mellen-McLean 2011).

A distribution analysis (http://www.fs.fed.us/r6/nr/wildlife/decaid-guide/distribution-analysis-green-tree.shtml) was used to determine how close current conditions for dead wood on the landscape match reference conditions. Existing conditions for down wood were derived by using Gradient Nearest Neighbor (GNN) data (LEMMA). GNN produces pixel-based maps with associated snag and down wood data. These maps provide the direct data necessary to construct "current situation" histograms. GNN uses the same data that were used to develop the distribution histograms for DecAID. For more information see (Ohmann 2002)

The analysis area for the distribution analysis encompasses both the Upper and Lower Joseph watersheds (USFS lands only). The is large enough to meet the minimum analysis area size of approximately 12,800 acres per wildlife habitat type recommended by the authors of DecAID (Mellen-McLean et a. 2012).

The distribution analysis results are then compared to the needs of woodpecker species using tolerance levels and intervals (range between 2 tolerance levels) from DecAID. A tolerance interval is similar to the more commonly used confidence interval but with a key difference: tolerance intervals are estimates of the percent of all *individuals* in the population that are within some specified range of values. In comparison, confidence intervals are estimates of *sample means* from the population of interest.

An example of use of a tolerance level is as follows. If the 50% tolerance level for snag density at pileated woodpecker nest sites in a specific wildlife habitat type is 7.8 snags/acre, the interpretation would be that 50% of nest sites used by pileated woodpeckers in that habitat have < 7.8 snags/acre and 50% of nest sites used by pileated woodpeckers have > 7.8 snags/acre.

Existing Conditions of Dead and Defective Habitat

The PPDF and EMC wildlife habitat types occur in the analysis area. Results of the DecAID distribution analysis are displayed in Figure(s) XXX. Tolerance levels for woodpeckers are displayed in Table(s) X.

Interpretation for PPDF WHT

In the Ponderosa Pine/Douglas-fir Wildlife Habitat Type (PPDF WHT), the landscape is near or above reference conditions for densities of large snags (>20"), and for snags >10" in density classes < 8 snags/acre (Figure 1). There is less area lacking snags (0 snags/acre) than would be expected under reference conditions, and more area in the lower snag density classes. Most woodpecker species using this WHT should currently have an adequate amount of snag habitat on the landscape. The exception is those species using high densities of small snags in recent post-fire habitats (e.g., black-backed woodpecker). Large snag habitat for pileated woodpecker and Williamson's sapsucker is rare in this WHT both currently and with reference conditions.

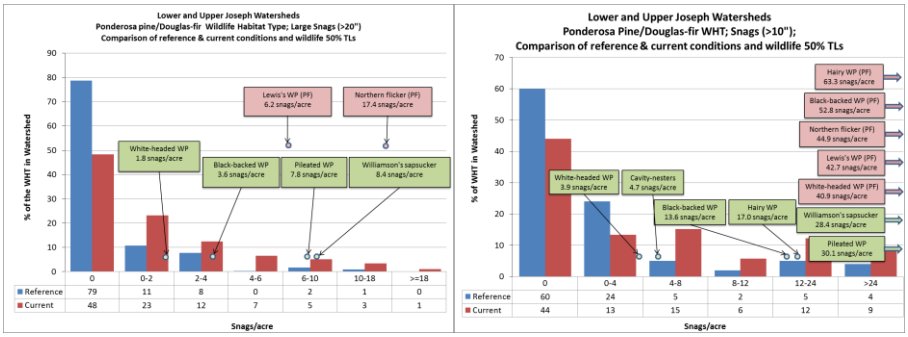

Table [3]. Tolerance levels for woodpeckers occurring in the PPDF Wildlife Habitat Type (From DecAID Tables PPDF_S/L.sp-22 and PPDF_PF.sp-22, only species with adequate snag density data are listed).

Species	Snag density/acre for 30%, 50%, 80% tolerance levels			
	Green Forests		Recent Post-fire	
	>10" dbh	>20" dbh	>10" dbh	>20" dbh
Black-backed woodpecker	2.5, 13.6, 29.2	0.0, 1.4, 5.7	37.4, 52.8, 76.5	
Hairy woodpecker			39.2, 63.3, 100.0	
Lewis's woodpecker			24.7, 42.7, 70.6	0.0, 6.2, 16.1
Northern flicker			25.0, 44.9, 83.1	2.2, 17.4, 39.6
White-headed woodpecker	0.0, 3.9, 11.9	0.5, 1.8, 3.8	22.2, 40.9, 68.3	
Williamson's sapsucker	14.0, 28.4, 49.7	3.0, 8.4, 16.3		

Interpretation for EMC WHT

In the Eastside Mixed Conifer Wildlife Habitat Type (WHT), the landscape is deficit in snags density classes above 2 per acre for large (> 20" dbh) snags, as compared to reference conditions (Figure 2 A, B). Snag habitat for cavity-nesting birds is generally below reference conditions for densities of both large (>20") and small (>10") snags as more area is within the snag density class of 0 snags/acre than would be expected. In the higher density classes, especially the highest density classes, the area is currently below reference condition (figure 2A, B).

These snag density classes (in deficit) provide habitat above the 30% tolerance level for pileated woodpecker and Williamson's sapsucker. Large snag habitat for those two species may be limiting in this WHT and the 2 woodpeckers may be limited to more productive sites in this WHT where snag densities are expected to be higher (Bull et al. 2006), (Ohmann and Waddell 2002)).

The amount of the landscape in the highest density classes for snags from unharvested stands (DecAID data) may be somewhat inflated due to an excess of dense stands with smaller trees susceptible to mortality than likely occurred historically. In addition, the data used in the calculation of reference conditions are from the late 1990s when spruce budworms were active in the Blue Mountains which created high levels of tree mortality.

Figure [2]. Comparison of reference condition to current condition for snag density classes in the EMC WHT portion of the Lower Joseph Analysis Area. Figure A displays snags > 20" dbh; figure B displays snags > 10" dbh. 50% tolerance levels for wildlife species are displayed on both figures. Reference condition derived from DecAID unharvested vegetation plots in the Blue Mountains (see analysis file); wildlife tolerance levels for green stands and post-fire habitat from Tables EMC_S/L.sp-22 and EMC_PF.sp-22 (Mellen-McLean et al. 2012). Current conditions from GNN data. (see analysis file)

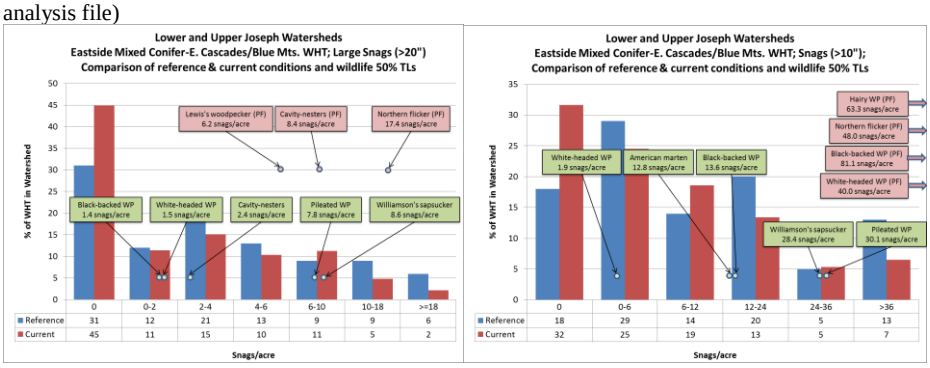

Table [4]. Tolerance levels for woodpeckers occurring in the EMC Wildlife Habitat Type] (From DecAID Table EMC_S/L.sp-22, only species with adequate snag density data are listed).

Species	Snag density/acre for 30%, 50%, 80% tolerance levels

	Green Forests	
	>10" dbh	>20" dbh
Black-backed woodpecker	2.5, 13.6, 29.2	0.0, 1.4, 5.7
Pileated woodpecker	14.9, 30.1, 49.3	3.5, 7.8, 18.4
White-headed woodpecker	0.3, 1.9, 4.3	0.0, 1.5, 3.8
Williamson's sapsucker	14.0, 28.4, 49.7	3.3, 8.6, 16.6
Pygmy nuthatch	1.1, 5.6, 12.1	0, 1.6, 4.0
American Marten	11.8, 12.8, 14.4	3.7, 4.0, 4.5

Environmental Effects on Dead and Defective Habitat

Snag habitat is currently adequate in the PPDF habitat type, and below reference conditions in the EMC habitat type. No snags are prescribed to harvested in any of the alternatives. However, it is likely that snag density will decline in areas treated due to safety, skid trails and other reasons (citation).

Snag prescription – see document *UsingDecAIDdataToDetermineSnagPrescriptions.docx* and select appropriate example and rationale. Clearly state the number of snags to be managed for and if that number meets LRMP S&Gs.
Mitigation measures – add mitigation measures to compensate for any negative impacts of project

- Closing roads
- In the EMC WHT (Moist Forests) – create snags from the trees >21" that may be getting harvested.???

Alternative 1 –
This alternative retains the most snag habitat in the short-term and mid-term to the degree that snags would not be reduced for operational reasons or consumed during prescribed burning as in the action alternatives.

Stands containing larger structure trees would continue to provide snag and down wood habitat to mostly meet habitat requirements of primary cavity nesters at least through the short-term (15-25 years). In the absence of stand replacement fires, snag densities and down wood levels would continue to increase. Stress in overstocked stands may lead to increased snag abundance but may also increase fuel loadings, increasing the likelihood of stand replacement fires. Stand replacing fires would reduce snag habitat for those PCE's associated with live closed canopied forests (e.g. pileated woodpecker), while increasing habitat for those PCE's associated with post-fire conditions (e.g. Lewis's woodpecker). Currently the abundance of post-fire habitat is below the RV within the project area.

Alternative 2 and 3
The vegetation treatments proposed will negatively impact current and future dead and defective wood habitat. It can be assumed that an increase in treatment unit acres would result in a greater reduction in snags and logs due to skid trails, landings, safety reasons and prescribed burning.

Treatments may increase the growth rate of remaining trees, thus increasing the amount of large trees in the mid to long-term. Eventually, they would become available as large snags and would benefit primary cavity excavators in the long term. Although snag densities within harvest units would not be reduced substantially, the effectiveness of snag habitat is reduced when stands are converted from a closed canopy setting to an open one. A few species (e.g., flicker, bluebirds) seem to do well in either setting, but others (e.g., pileated woodpeckers, nuthatches, black-backed woodpeckers) generally avoid nesting and foraging in open settings.

It is unknown how the prescriptions using the ICO (individual, clumps, and openings) may affect the future development of snags. In the 'clumps' which are left unharvested, natural snag creating mechanism such as density will remain and snags will continue to develop in both the short and long-term. However, in areas that are thinned 'individuals', snag creating mechanisms may be removed, thus at least in the short-term, natural snag creation may happen less often than in the current more dense stands.

Alternative 2 harvests more acres than Alternative 3, thus there is a greater reduction in snag and down-wood habitat in Alternative 2 due to safety and placement of skid trails, landings, etc. Even when not prescribed for removal, research has found that thinning like treatments resulted in losses of pre-treatment snags (Harrod et al. 2009, Agee 2002).

The closing of roads will positively affect the abundance of snag and down wood habitat; therefore alternative 2 will have a less negative impact than Alternative 3 because fewer roads will be open to the public. Bate et al. (2007) and Wisdom and Bate (2008), found that snag numbers were lower adjacent to roads due to removal for safety considerations, removal as firewood, and other management activities (Bate et al. 2007, Wisdom and Bate (2008), Hollenbeck et al. 2013).

Table [6]. Summary of cumulative impacts to dead and defective wood habitat (acres affected).

	UF_PVG				
Alternative 2	Dry	MST	Other	Total	% of Forested Area
Commercial harvest	12,509	3,423	734	16,666	30
Stand improvement	3,440	2,013		5,453	10
Not treated	26,458	7,522		33,980	61
Total Forested area	42,407	12,958	734	56,099	

Alternative 2	Acres Harvest	21" = yes	% Harvest Area with trees >=21" potentially removed
Dry PVG	12,509	4,887	31
Moist PVG	3,423	215	1
Total Commercial Harvest	15,932	5,102	32

	UF_PVG				
Alternative 3	Dry	MST	Other	Total	% of Forested Area
Commercial harvest	7,175	2,705	285	10,165	18
Stand improvement	1,530	1,083		2,613	5
Not treated	33,702	9,170		42,872	77
Total Forested area	42,407	12,958	285	55,650	

Cumulative Effects on Dead and Defective Habitat

The list of past, present and foreseeable actions was reviewed to determine potential effects to dead and defective wood habitat. Other actions which would contribute to potential cumulative effects include hazard tree removal and firewood gathering. Within the Lower Joseph project area (nearly 100,000 acres), there are no other vegetation projects planned in the foreseeable future. In the past 10 years ….

Cumulative effects of the proposed project and the potential for hazard tree removal and firewood gathering have the potential to impact habitat and may increase risks to dead and defective wood habitat. This increased risk to loss of snags is of most concern in the EMC habitat type (Moist Forest PVG).

Alternative 1

This alternative would not contribute to cumulative effects of other management activities in the analysis area. Snag habitat in past treatment units would slowly develop as these stands grow and snags are naturally recruited in the long-term. In the absence of large scale disturbances snag densities would likely reflect densities from un-harvested areas across the analysis area within 100 years and down wood levels would continue to increase. Drought stress in overstocked stands will increase fuel loadings, increasing the likelihood of stand replacement reducing snag habitat in the long term.

Alternatives 2 and 3

Proposed activities (removing trees, retaining large trees (Alt 3 only) , prescribed burning) are expected to help create habitat for PCEs using open forests with large trees in the long-term and reduce habitat for those PCEs using dense forests. Both alternatives would retain snags >12 inches diameter, except those lost for operational reasons or during prescribed burning. This would result in a minor effect since the existing snag component will change very little except for changes from closed canopy settings to open canopy settings and the loss of snags due to operational reasons and prescribed fire. This would have a positive effect for some species and a negative effect for others. Flickers and white-headed woodpeckers, which is a species of population viability concern, would benefit from treatments that accelerate the development of open canopied stands that maintain large snags.

Harvest activities in the action alternatives in combination with the fuel reduction activities on adjacent private lands may increase firefighting options and the potential to limit the size of wildfires in the area. The combined fuel reduction activities on public and private lands increase the potential to limit the amount of long term snag habitat lost within the analysis area.

Ongoing miles of open roads and an ‘open forest’ for use by motor vehicles also limit the amount of snags across the landscape.

Together with other landscape objectives that limit or discourage large fires and insect outbreaks, the project would contribute to a negative trend in dead and defective wood habitat (X% reduction in habitat) across the Forest.

While additive cumulative effects may be anticipated, projects are consistent with LRMP objectives.

Conclusion for Dead and Defective Habitat

It can be assumed that an increase in treatment unit acres would result in a greater reduction in snags and logs due to skid trails, landings, safety and prescribed burning. Alternative 3 treats fewer acres in the Lower Joseph project area compared to Alternative 2 and therefore, Alternative 3 would better meet the snag needs for PCEs. Standards for snags and down wood would be met in both action alternatives

Because this project impacts less than X% of dead and defective wood habitat across the Forest, the overall direct, indirect and cumulative effects will result in a small negative trend of habitat [short/long term]. The loss of habitat will be insignificant at the scale of the Forest. The Lower Joseph Project is consistent with the Forest Plan, and thus continued viability of MIS for dead and defective wood habitat is expected on the Wallowa-Whitman National Forest.

Pileated Woodpecker

The Pileated woodpecker is an MIS for both dead and defective wood habitat and old growth habitats. Below is a summary of Pileated woodpecker ecology important to providing information pertinent to assessing impact of the project on the species. For additional details see Mellen-McLean (2012a) in the analysis file. Also see the body of work by Evelyn Bull in the Blue Mountains (Bull 1987, Bull and Holthausen 1993, Bull et al. 2005, Bull et al. 2007) and Nielsen-Pincus and Garton 2007.

Pileated woodpeckers are associated with late-seral stages of the subalpine, montane, lower montane forests. Specifically, the old-forest single- and multi-strata stages of mixed conifer forests (Wisdom et al. 2000). Stands of pure ponderosa pine typically lack the abundance of snags and downed wood necessary for foraging habitat for pileated woodpeckers (Bull et al. 2007). In the Blue Mountains, densities of nesting pairs of pileated woodpeckers were positively associated with the amount of late structural stage forest and negatively associated with the amount of area dominated by ponderosa pine and the amount of area with regeneration harvests since 1970 (Bull et al. 2007).

Snags, down logs, and large hollow trees are important habitat components for Pileated woodpeckers. Large ponderosa pine and western larch snags are used for nesting and roosting (Bull 1987). Bull and Holthausen (1993) found that density of large snags (> 20 inches dbh) was the best predictor of density of pileated woodpeckers in the Blue Mountains. The woodpeckers also use large, decadent trees and hollow grand fir for roosting (Bull et al. 1992). Large snags and down logs are important foraging substrate for pileated woodpeckers in the Blue Mountains (Bull 1987).

Pileated woodpeckers are considered vulnerable in the state by Oregon Department of Fish and Wildlife (http://www.dfw.state.or.us/wildlife/diversity/species/docs/SSL_by_taxon.pdf). However, they are considered "apparently secure" in Oregon by NatureServe (http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Dryocopus+pileatus).

Existing Conditions for Pileated Woodpecker

Due to an increase in dense, multi-canopy stands due to fire suppression, habitat for Pileated woodpeckers is increasing across the Blue Mountains (Wisdom et al. 2000). However, densities of large-diameter snags (>21 inches dbh) have declined from historical to current levels (Wisdom et al. 2000, Korol et al. 2002).

As discussed in the Dead and Defective Habitat section above, densities of large snags (>20 inches dbh) in the EMC WHT are below reference conditions in the snag density classes that provide habitat for pileated woodpeckers (Figures 2 and 3)] Snag habitat is likely to be a limiting factor for pileated woodpeckers in the EMC habitat types (moist forest pvg).

A viability assessment completed for the LRMP Revision indicates a moderate viability concern for the Pileated woodpecker on the Wallowa-Whitman National Forest; suitable environments are moderately distributed and/or exist at moderate abundance across the historical range of the species (Wales et al. 2011).

Stands of pure ponderosa pine typically lack the abundance of snags and downed wood necessary for foraging habitat for pileated woodpeckers (Bull et al. 2007). In the Blue Mountains, densities of nesting pairs of pileated woodpeckers were positively associated with the amount of late structural stage forest and negatively associated with the amount of area dominated by ponderosa pine and the amount of area with regeneration harvests since 1970 (Bull et al. 2007).

Although there is a preference for dense canopy stands, high tree mortality and loss of canopy closure in stands of grand fir and Douglas fir did not appear to be detrimental to pileated woodpecker provided that large dead or live trees and logs

were abundant and that stands were not subject to extensive harvest. Pileated woodpecker densities remained steady over 30 years in areas where canopy cover dropped below 60% due to tree mortality; older stands of grand fir and Douglas fir consisting primarily of snags continued to function as nesting, roosting and foraging habitat for pileated woodpeckers. While closed canopy forests were not essential for use by pileated woodpeckers, nest success was higher in home ranges that had greater amounts of forested habitat with ≥ 60% canopy closure (Bull et al. 2007).

The quantity of open roads across negatively influences the abundance of large snag due to removal for safety considerations, removal as firewood, and other management activities (Bate et al. 2007, Wisdom and Bate (2008), Hollenbeck et et al. 2013).

Due to an increase in dense, multi-canopy stands due to past management including fire suppression, structural conditions used by Pileated woodpeckers may have increased especially in drier potential vegetation types. On the Wallowa-Whitman NF, Wales et al (2011) found that RV for pileated woodpeckers in potential habitat was 1-39 %. Currently in the LJ project area pileated woodpecker is at about 16% of the RV.

Potential habitat for this species was defined as a subset of the 'Dry PVG', and also all of the Moist PVG. The subset of the 'Dry PVG included Dry Grand-Fir and Dry Douglas Fir. Additionally source habitat for this analysis was defined as large trees (>=21"), with a canopy closure of >=40% in the Dry types and >=60% in the Moist types.

Effects to Pileated Woodpecker

Alternative 1:
Quantity of source habitat will not change. Source habitat abundance will remain within the RV.

Quality of habitat will not change as a direct effect of this alternative. Ongoing tree growth will continue to increase canopy closure and density of large trees and snags, thus increasing source habitat for pileated woodpeckers.

Snag density will not be affected by potential harvest activities.

The abundance of open roads across the planning area will not change in Alternative 1. Removal of snags for fire-wood and safety will continue at current levels across the planning area.

Risk to large scale fire would continue to increase, large-scale stand replacing fires would not provide source habitat for pileated woodpecker (Bull XX).

Risk to loss of live trees due to insects and/or disease would continue to increase. Bull et al. (2007) found that high tree mortality and loss of canopy closure in stands of grand fir and Douglas fir did not appear to be detrimental to pileated woodpecker provided that large dead or live trees and logs were abundant and that stands were not subject to extensive harvest.

Alternative 2
Quantity of source habitat increases in Alternative 2 due to the resulting increase in mean diameter of stands that have been harvested. Because canopy closure remains above the minimum (40% in the Dry PVGs, and 60% in the Moist PVGs, and mean diameter of the trees is >=21", the area should qualify as source habitat. Source habitat abundance will remain within the RV (18 %) (see table XX).

Quality of habitat will decline through the loss of canopy closure, loss of large trees (>=21"), and loss of large snags. Although snags are not prescribed to be removed, snag densities will decline due to safety, skid trails, and landings. Alternative 2 proposes the greatest number of acres of harvest (XXXXX), thus the loss of large snags, and loss of canopy will be the greatest in this alternative.

The abundance of open roads across the planning area will be reduced by XX miles. As compared to Alternatives 1 and 3, this reduction in the amount of open roads will have the greatest positive impact of any of the alternatives. The potential for removal of snags for fire-wood and safety will be reduced across the planning area on approximately XX miles.

Risk to large scale fire would be reduced (see fire write-up). Large-scale stand replacing fires would not provide source habitat for pileated woodpecker (Bull XX).

Risk to loss of live trees due to insects and/or disease would be reduced across the planning area (see silviculture write-up). Although, Bull et al. (2007) found that high tree mortality and loss of canopy closure in stands of grand fir and Douglas fir did not appear to be detrimental to pileated woodpecker provided that large dead or live trees and logs were abundant and that stands were not subject to extensive harvest.

Of the 8037 acres of source habitat retained in Alternative 2 all but about 500 acres are in the 'high' priority for prescribed fire. Implementation of thinning or prescribed burning is likely to result in loss of snags, future snags, and down wood that are important habitat attributes of pileated woodpecker . The retention and protection of snags during treatments could minimize the effects of treatments on cavity dependent wildlife, and retaining some down wood in treated stands could minimize negative effects on species that depend on this habitat structure such as the pileated woodpecker (Pilliod et al. 2012).

Finch and others (1997) reviewed studies that evaluated the effects of prescribed fire on snags and down wood in southwestern ponderosa pine forests and found that snag loss was greatest in the large size classes and in the decay classes that contained nest cavities. Snag loss typciall ranged from 20- 80 percent and loss of down wood from 42-74 percent depending on the burn severity and dead wood characteristics Finch et al 1997, Randall-Parker and Miller 2002).

If large-diameter snags and trees are protected during fuel reduction, it is likely that thinning or prescribed fire may have minimal or even positive effects on bat populations depending on the starting conditions and management history of the site (Boyles and Aubrey 2006; Patriquin and Barclay 2003; Schmidt 2003). However, the loss of these habitat features may be detrimental to forest bat species (Chambers and others 2002).

Alternative 3

Quantity of source habitat declines the most in Alternative 3, however source habitat abundance will remain within the RV.

Quality of habitat will decline through the loss of canopy closure, and loss of large snags. Although snags are not prescribed to be removed, snag densities will decline due to safety, skid trails, and landings. Alternative 3 proposes the fewer acres of overall harvest (XXXXX) thus the loss of large snags will be the greatest in this alternative. Additionally, Alternative 3 does not include removal of trees >21" dbh which will help to maintain higher quality of habitat on those areas treated that retain sufficient size class and tree canopy to remain source habitat.

The abundance of open roads across the planning area will be reduced by XX miles. As compared to Alternatives 1 and 3, this reduction in the amount of open roads will have the greatest positive impact of any of the alternatives. The potential for removal of snags for fire-wood and safety will be reduced across the planning area on approximately XX miles.

Risk to large scale fire would be reduced (see fire write-up). Large-scale stand replacing fires would not provide source habitat for pileated woodpecker (Bull XX).

Risk to loss of live trees due to insects and/or disease would be reduced across the planning area (see silviculture write-up). Although, Bull et al. (2007) found that high tree mortality and loss of canopy closure in stands of grand fir and Douglas fir did not appear to be detrimental to pileated woodpecker provided that large dead or live trees and logs were abundant and that stands were not subject to extensive harvest.

Pileated	EC/A1	A2	A3	Comment

Woodpecker				
Source Habitat (acres)	7,330	8,037	6,406	
% HRV	16.10%	17.60%	14.00%	The current condition as well as the outcome of all alternatives, maintain source habitat within the HRV. The HRV for this species is about 1-39%.
Acres source habitat with commercial harvest	0	3,717	1,444	Acres of pileated woodpecker habitat that has been commercially harvested are likely lower quality.
% source habitat with commercial treatment	0	46.2%	22.5%	Acres of pileated woodpecker habitat that has been commercially harvested are likely lower quality. It is expected that within 10-30 years the habitats that were harvested and are of lesser quality will transition (through growth) to higher quality source habitat
Acres of source habitat not commercially treated	7,330	4,320	4,962	Pileated woodpecker habitat that is not commercially harvested, are likely higher quality habitat.
% HRV of source habitat not treated	16.10%	9.50%	10.90%	Percentage of untreated pileated woodpecker habitat. The HRV for this species is about 1-39%. .
Acres of large (>=21" trees) potentially harvested	0	Xxxx?	0	Loss of large trees will negatively affect the quantity and quality of current and future habitat for pileated woodpeckers.
Miles of road closed and/or decommissioned				The greater the reduction in open roads, the greater the benefit to pileated woodpeckers. Removal of snags an important habitat feature is greater along open roads.l

The loss of Large (>21") trees in Alternative 2 (only) will negatively affect Pileated Woodpeckers and other cavity nesting and large tree dependent wildlife species.

Alternative 2	Acres Harvest	21" = yes	% Harvest Area with trees >=21" potentially removed
Dry PVG	12,509	4,887	31
Moist PVG	3,423	215	1
Total Commercial Harvest	15,932	5,102	32

Table [9]. Summary of impacts to Pileated woodpecker habitat (acres) by Alternative (lowjo numbers)

	Existing	Alternative 2	Alternative 3
Project Area	7,330	8,037	6,406
Wallowa-Whitman National Forest	**202,785**	203,492 (+ <1%)	201,861 (- <1%)

Cumulative Effects to Pileated Woodpecker

The list of past, present and foreseeable actions was reviewed to determine potential effects to Pileated woodpecker. The only actions which would contribute to potential cumulative effects include [Other projects impacting secondary habitat, fire/insect risk, snag habitat], because the effects overlap in time and space. List applicable projects (e.g., in table 10)] Cumulative effects of all of the proposed projects [have the potential/do not have the potential] to impact habitat [and/or will/will not] increase risks to Pileated woodpeckers.

Quantify the cumulative effects to the extent possible. Past actions and their effects that occurred prior to the vegetation data you use will be included in current condition. See Table 10 for an example.

Table [10]. Summary of cumulative impacts to pileated woodpecker habitat (acres).

	Current Project	Project X	Project X
Acres of habitat affected	4000	3106	2601
Percent of habitat in analysis area affected	9%	7%	6%

Prescribed harvest treatments will temporarily decrease canopy closure, foraging (down logs) and roosting (hollow, live grand fir) substrate will be reduced, but not eliminated. This may reduce the potential of the area to provide habitat for pileated woodpeckers in the short term (0-20 years) however, the quantity of source habitat for pileated woodpeckers is projected to increase and remain within the HRV in the longer term (>=50 years) (is this what mile's data says?) .

Example wording for no cumulative effects:

These (type) projects are not expected to result in cumulative effects in combination with the XXX Project, because they will have no effect on species habitat. No short- or long-term Pileated woodpecker population decrease would occur; therefore, additive cumulative effects are not anticipated.

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While additive cumulative effects may be anticipated, projects are consistent with LRMP objectives.

Conclusions for Pileated Woodpecker

This project will impact Pileated woodpecker habitat in the project area. Though some current source habitat will be harvested, and the quality of the habitat may be reduced, overall, source habitat will remain within the Range of Variation for this species in this project area. Therefore, the Lower Joseph Project will not contribute to a negative trend in viability on the Wallowa-Whitman National Forest for the Pileated woodpecker.

American Marten

The American marten is an MIS for old growth habitats. Below is a summary of American marten ecology important to providing information pertinent to assessing impact of the project on the species. For additional details see Mellen-McLean (2012b) in the analysis file. Also see the body of work led by Evelyn Bull in the Blue Mountains (Bull 2000, Bull and Blumton 1999, Bull et al. 2005, Bull and Heater 2000, 2001a, and 2001b).

American marten are associated with old multi- and single-story, and unmanaged young multi-story structural stages in subalpine and montane forests. Large snags and down logs provide rest and den sites for marten (Wisdom et al. 2000). In the Blue Mountains, marten selected unharvested, closed canopy (50-75%), old-structure stands in subalpine fir, spruce, grand fir and lodgepole forests (Bull et al. 2005). Stands used by martens had higher densities of large snags (>20 inches dbh), averaging 4.0 snags/acre. Snags used as resting and denning sites average from 26 to 38 inches dbh in eastern Oregon, depending on habitat type (Mellen-McLean et al. 2012).

The American marten is one of the most habitat-specialized mammals in North America (Bull and Heater 2001). Marten in northeastern Oregon exhibited larger home ranges than those found in many studies with an average home range size of 6,714 acres for males and 3,499 acres for females (Bull and Heater 2001). Bull and Heater (2001) recommended managing larger areas (16.78 mi^2 (10,739 acres) per breeding pair) for marten in northeastern Oregon. Martens respond negatively to low levels of habitat fragmentation (>25%, Hargis et al. 1999), and Bull and Blumton (1999) found declines in red –backed voles, red squirrels, and snow shoe hares in fuel reduction harvests, which are primary prey items for martens. Furthermore, martens avoided all harvested stands and stands with less than 50 % canopy closure (Bull et al. 2005).

In addition to providing rest and den sites, down wood is an important component of marten habitat because the primary prey of martens is small mammals associated with down wood. These small mammals include voles (*Microtus sp.*) red-backed voles (*Clethrionomys gapperi*), snowshoe hares (*Lepus americanus*) and squirrels in northeast Oregon (Bull and Blumton 1999, Bull 2000). Subnivean (under snow) spaces created by logs provide marten with access to prey during the winter (Bull and Blumton 1999). Down wood used as den and rest sites in the Blue Mountains averaged 26 inches dbh (Bull and Heater 2000).

Alexander and Waters (2000) observed avoidance by martens of areas within 50 m of roads. Roads also facilitate the removal of snags as fire wood and for safety considerations (Gaines et al. 2003, Bate et al. 2007, Wisdom and Bate 2008). The findings of Godbout and Ouellet (2008) indicate that increasing road density results in lower quality habitat for American martens.

American marten are considered vulnerable in the Blue Mountains by Oregon Department of Fish and Wildlife (http://www.dfw.state.or.us/wildlife/diversity/species/docs/SSL_by_taxon.pdf), however, they are also a hunted species. They are considered "vulnerable" to "apparently secure" in Oregon by NatureServe (http://www.natureserve.org/explorer/servlet/NatureServe). Reduction in amount of late-seral forest and associated large snags and logs, and associated fragmentation of habitat are the main reasons marten are considered vulnerable (Wisdom et al. 2000, Hargis et al 1999).

A viability assessment completed for the LRMP Revision indicates a low to moderate concern for the American marten on the Wallowa-Whitman National Forest. Historically habitat was of moderate to low abundance with gaps in distribution, and these currently conditions are similar at the scale of the Forest (Wales et al. 2011). DEFINE Low to moderate

Existing Conditions for American Marten

Potential habitat for Marten in the Lower Joseph project area is limited. Currently there are 9,833 acres of potential habitat (Moist PVG) of which about 1829 acres of source habitat in the project area (17% of the potential). Source habitat was described as those stands in moist forest with predominantly large trees (>=21"), and closed canopy conditions (>=60%).

The HRV for this habitat is displayed in Table J. The HRV was developed from Countryman and XXX (2009).

Table J

HRV			
Moist_Large Tree_Closed Canopy			Lower Joseph Project Area
Low	Median	High	Existing Condition

19%	24%	29%	17%

Currently the project area contains about 17% of the potential as source habitat, which is just below or at the lower HRV for this habitat type.

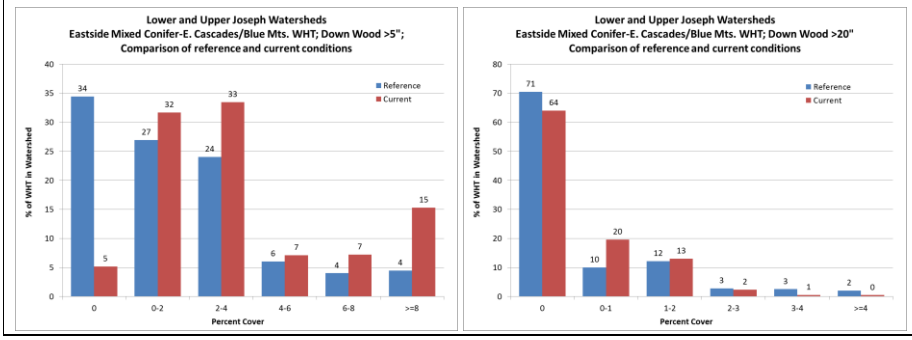
As discussed in the Dead and Defective Habitat section above, densities of large snags (>20 inches dbh) in the EMC WHT (Moist Pvg) are below reference conditions in the snag density classes that provide habitat for American marten (Figures X and XX). Snag habitat is likely to be a limiting factor for marten in these habitat types.

Table [X]. Tolerance levels for American marten occurring in the EMC Wildlife Habitat Type (From DecAID Table EMC_S/L.sp-22)

Species	Snag density/acre for 30%, 50%, 80% tolerance levels	
	Green Forests	
	>10" dbh	>20" dbh
American Marten	11.8, 12.8, 14.4	3.7, 4.0, 4.5

Figure [8]. Comparison of reference condition to current condition for snag density classes in the EMC WHT portion of the Lower Joseph Project Area. Figure A displays snags > 20" dbh; figure B displays snags > 10" dbh. 50% tolerance levels for wildlife species are displayed on figure A. 30, 50 and 80% tolerance levels for black-backed woodpeckers are displayed on figure B. Reference condition derived from DecAID unharvested vegetation plots in the Blue Mountains (see analysis file); wildlife tolerance levels from Tables EMC_S/L.sp-22 and EMC_PF.sp-22 (Mellen-McLean et al. 2012).

A) B)



Effects to American Marten

Alternative 1 - Because management activities would not take place under Alternative 1, there would be no direct effects on marten source habitat in the short term. In the absence of large scale disturbances, the Lower Joseph project area would continue to provide marten habitat in moist large tree - closed canopy forests.

Due to the high abundance of adjacent primarily dry forests with uncharacteristic closed-canopied forests, there is an increased risk of insect infestation and mortality as well as increased susceptibility to disease as well as fire. Both standing and down fuels will continue to increase over time as trees die due to competition or insects. This would increase snags and down wood, which are beneficial to marten, but could increase the severity of a wildfire, should one occur. Few large animals die in wildfires, but fires change habitats, and intense fires change habitat most dramatically (USDA Forest Service 2002). Effects from a stand replacing fire could convert marten habitat to an unsuitable condition.

Alternative 2 – Proposed commercial harvest in the Moist Forests is 3,423 acres, of which 831 acres is within what currently qualifies as marten source habitat (moist – large tree – closed canopy). These 831 acres represents about 38% of the current source habitat for marten in the project area. The prescription on these 831 acres is a combination of GS_Mod (114 acres), STS_High (122 acres), and STS_Mod (595 acres). The design criteria for these prescriptions is to maintain >60% canopy closure, and multi-story conditions; no trees >=21" would be harvested. It is assumed that post-harvest these stands will be maintained as source habitat. It is likely that in the short-term they may meet minimum qualifications as source habitat but the quality of the habitat may be reduced due to reduced complexity and tree density, potential loss of snags and logs due to logging operations and safety.

As discussed in the Dead and Defective Habitat section above, densities of large snags (>20 inches dbh) in the Moist forest are below reference conditions in the snag density classes that provide habitat for American marten (Figures X and XX). Snag habitat is likely to be a limiting factor for marten in these habitat types. Harvesting on 3,423 acres will add to a reduction in snag habitat, further declining habitat quality for marten in this area.

In Alternative 2 on 114 acres of the marten habitat that is being commercially harvested, is in the prescription 'GS_Mod' (group selection – moderate). Group selections can include openings that are 1-4 acres. As described above, Martens respond negatively to low levels of habitat fragmentation (Hargis et al. 1999), it may be that openings as large as 4 acres will reduce the quality of the habitat for marten. In the longer-term, as trees continue to grow, American marten would continue to use these harvested areas for some or all of their life history functions. Vegetation treatments, in both action alternatives, are assumed to modify fire behavior and reduce the effects of a stand replacement event, thereby potentially retaining source habitat in the long-term.

The potential removal of trees >=21" dbh on 303 acres of Moist forest not currently source habitat for marten in Alternative 2 may negatively affect the long-term recruitment of snag habitat, as these trees will no longer be available as potential snags and down wood. Additionally the harvest of large trees within the Moist forest may lead to a delay in development of source habitat and or lower the quality of potential source habitat in the longer term.

The additional road closure of xx miles proposed in this alternative will likely benefit marten. Open roads can contribute to a loss of quality of habitat through loss of snags and downwood due to firewood harvest and safety, and can reduce habitat quality for marten (Godbout and Ouellet 2008).

Alternative 3 – Proposed commercial harvest in the Moist Forests is 2,705 acres, of which 742 acres is within what currently qualifies as marten source habitat (moist – large tree – closed canopy). These 742 acres represents about 34% of the current source habitat for marten in the project area. The prescription on these 742 acres is a combination of GS_Mod (108 acres), STS_High (122 acres), and STS_Mod (512 acres). The design criteria for these prescriptions is to maintain >60% canopy closure, and multi-story conditions; no trees >=21" would be harvested. It is assumed that post-harvest these stands will be maintained as source habitat. It is likely that in the short-term they may meet minimum qualifications as source habitat but the quality of the habitat may be reduced due to reduced complexity and tree density, and potential loss of snags and logs due to logging operations and safety.

As discussed in the Dead and Defective Habitat section above, densities of large snags (>20 inches dbh) in the Moist forest are below reference conditions in the snag density classes that provide habitat for American marten (Figures X and XX). Snag habitat is likely to be a limiting factor for marten in these habitat types. Harvesting on 2,705 acres will add to a reduction in snag habitat, further declining habitat quality for marten in this area. However, in Alternative 3 there will be no removal of trees >=21" dbh which should be beneficial in long-term recruitment of snag habitat, as these trees will be available as potential snags and down wood.

In Alternative 3 on 108 acres of the marten habitat that is being commercially harvested, is in the prescription 'GS_Mod' (group selection – moderate). Group selections can include openings that are 1-4 acres. As described above, Martens respond negatively to low levels of habitat fragmentation (Hargis et al. 1999), it may be that openings as large as 4 acres will reduce the quality of the habitat for marten. In the longer-term, as trees continue to grow, American marten would continue to use these harvested areas for some or all of their life history functions. Vegetation treatments, in both action

alternatives, are assumed to modify fire behavior and reduce the effects of a stand replacement event, thereby potentially retaining source habitat in the long-term.

Road densities would not change from current or do they increase?
Open roads can contribute to a loss of quality of habitat through loss of snags and downwood due to firewood harvest and safety, and can reduce habitat quality (Godbout and Ouellet 2008).

LRMP SGs ?

Table [11]. Summary of impacts to American marten habitat (acres) by Alternative.

Source habitat (acres)	Existing	Alternative 2	Alternative 3
Project Area Habitat	1,829	1829	1829
Habitat treated (maintain habitat)		831 (38%)	742 (34%)
Wallowa-Whitman National Forest	**116,347**	**116,347**	**116,347**

Cumulative Effects to American Marten

Table X. 2004 to 2013 – Approximate acres of vegetation management activities and wildfire in the Lower Joseph Creek Restoration Project area

Treatment	Treatment Type	Approximate Acres
Cultural	Tree Planting	159
	Precommercial Thin	826
Total Cultural:		**985**
Mechanical Vegetation Management	Commercial Thin	1320
	Single-tree Selection Cut (UA/RH/FH)	36
	Group Selection Cut (UA/RH/FH)	77
	Sanitation Cut	3
Total Mechanical:		**1436**
Fuels Treatments	Thinning for Hazardous Fuels Reduction	179
	Yarding - Removal of Fuels by Carrying or Dragging	86
	Piling of Fuels, Hand or Machine	460
	Rearrangement of Fuels	37
	Burning of Piled Material	636
Total Fuels Treatments:		**1398**
Prescribed Burn	Broadcast Burn (Majority of Unit) - Wildlife Habitat	592
	Underburn (Majority of Unit) - Low Intensity	276
Total Prescribed Burn:		**868**
Wildfire	Jim Creek - 2006	360
	Cottonwood - 2007	8439
	Cache Creek - 2012	14953
Total Wildfire:		**23752**

Due to an increase in dense, multi-canopy stands due to fire suppression, habitat for American marten is increasing across the Blue Mountains (Wisdom et al. 2000). However, densities of large-diameter snags (>21 inches dbh) have declined from historical to current levels (Wisdom et al. 2000, Korol et al. 2002).

A viability assessment completed for the LRMP Revision indicates a low to moderate concern for the American marten on the Wallowa-Whitman National Forest. Historically habitat was of moderate to low abundance with gaps in distribution, and these currently conditions are similar at the scale of the Forest (Wales et al. 2011).

The list of past, present and foreseeable actions was reviewed to determine potential effects to American marten. The only actions which would contribute to potential cumulative effects include [Other projects impacting secondary habitat, fire/insect risk, snag habitat], because the effects overlap in time and space.
GET TABLE FROM PAUL

Cumulative effects of all of the proposed projects [have the potential/do not have the potential] to impact habitat [and/or will/will not] increase risks to American marten.
Quantify the cumulative effects to the extent possible. Past actions and their effects that occurred prior to the vegetation data you use will be included in current condition. See Table 12 for an example.

Table [12]. Summary of cumulative impacts to American marten habitat (acres).

	Current Project	Project X	Project X
Acres of habitat affected			
Percent of habitat in analysis area affected			

Example wording for no cumulative effects:
These (type) projects are not expected to result in cumulative effects in combination with the XXX Project, because they will have no effect on species habitat. No short- or long-term Pileated woodpecker population decrease would occur; therefore, additive cumulative effects are not anticipated.
Example wording for anticipated cumulative effects:
Much of the fuels reduction/thinning proposals are within American marten habitat. The thinning and fuels treatments proposed, are additive to other similar projects in the larger cumulative effects area.

Alternative 1: Because all actions would be deferred, there would be no cumulative effects from this alternative.

Together with other landscape objectives that limit or discourage large fires and insect outbreaks, the project would help protected existing old growth habitat from these disturbances. However, these same treatments would contribute to a negative trend in dead wood, an important component of marten habitat, across the Forest. These treatments, added to the needs for hazard tree falling along roads and trails either from new projects or ongoing/existing projects, will alter or remove this component of marten habitat.

While additive cumulative effects may be anticipated, projects are consistent with LRMP objectives.

Conclusions for American Marten

Small negative impact:
Because this project proposes some commercial treatment to 38% of the suitable habitat across the planning area and because the planning area is currently at the lower end of the HRV, it Forest,

The overall direct, indirect and cumulative effects will result in a small negative trend of habitat. The loss of habitat quality will be insignificant at the scale of the Forest and will likely be short-term.

The Lower Joseph Project is consistent with the Forest Plan, and thus continued viability of the American marten is expected on the Wallowa-Whitman National Forest.

Northern Goshawk

The goshawk is a MIS with nesting requirements associated with old-growth habitat, but will use a variety of forest structure types for other life history needs. It is an indicator of the abundance and distribution of mature and old-growth forests.

The northern goshawk uses a complex mosaic of landscape conditions to meet various life history requirements for nesting, post-fledgling, and foraging (Reynolds et al. 1992). Goshawk nesting habitat in eastern Washington and Oregon was generally composed of mature and older forests (McGrath et al. 2003). Nest stands were typically composed of a relatively high number of large trees, high canopy closure (>50%), multiple canopy layers, and a relatively high number of snags and downed wood (Finn 1994, McGrath et al. 2003).

Goshawks forage in a variety of forest types; however several studies have shown the importance of mid to late successional forests as foraging habitat for goshawks (Austin 1993, Bright-Smith and Mannan 1994, Hargis et al. 1994, Beier and Drennen 1997, Patla 1997, Daw and DeStefano 2001, Finn et al. 2002 a, b, Drennan and Beier 2003, Desimone and DeStefano 2005). Results from Beier and Drennen (1997) supported the hypothesis that goshawk morphology and behavior are adapted for hunting in moderately dense, mature forests, and that prey availability (as determined by the occurrence of favorable vegetation structure) is more important than prey density in habitat selection. Salafsky and Reynolds (2005) showed that goshawk productivity was related to prey availability, especially critical prey species. Taken together, these studies show the importance of habitat structure to goshawk foraging behavior and productivity.

Changes in forest structure due to fire exclusion within the dry forest cover types may seem to increase the availability of source habitat for the goshawk. However, they may not be as valuable as the more open habitats they replaced because the in-growth of small trees may obstruct flight during foraging, suppress growth of large trees needed for nesting, and reduce the growth of herbaceous understory that provides habitat for prey (Reynolds et al. 1992).

Human disturbances at goshawk nest sites have been suspected as a cause of nest abandonment (Reynolds et al. 1992). In addition, roads and trails may facilitate access for falconers to remove young from nests (Erdman et al. 1998). Wisdom et al. (2000) identified habitat fragmentation or habitat loss as a forest road-associated factor for goshawks. In addition, roads may increase the likelihood of the removal of snags for safety and firewood collection, which could have negative effects on the prey base for goshawks (Wisdom et al. 2000). However, Grubb et al. (1998) reported that vehicle traffic with a noise level of <54 decibels on roads >400m from nest sites did not result in discernable behavioral response by goshawks in forested habitats.

Existing Conditions for Northern Goshawk

Analysis of Source Habitat on the WWNF

Wales et al.(2011) analyzed source habitat of numerous wildlife species of interest in the Blue Mountains and WWNF in support of the Blue Mountains Forest Plan Revision. Source habitats are defined by Wales as those stands that provide for a stable or increasing population and for all the life history needs of the goshawk including nesting, roosting, foraging, resting, travel, and dispersal. Potential habitat is defined as stands within dry Douglas-fir, dry grand fir, cool moist and cold dry potential vegetation groups that have the capability to provide source habitat but that currently do not provide the tree size, canopy cover, or structural conditions.

Wales (2011c) estimated that approximately 466,679 acres of source habitat existing on the WWNF historically. Currently, approximately 440,696 acres (94% of estimated historical conditions) of source habitat occurs on the WWNF.

Source habitat for the goshawk is identified as forests with >15" DBH and closed canopies (dry forests canopy closure >=40%, moist forest canopy closure >=60%). The risk and habitat quality factors were the abundance of forests with trees >20" and closed canopy as well as habitat effectiveness. Primarily as a result of an abundance of source habitat in many

areas above the median HRV, the viability of goshawks in the Blue Mountains was calculated to currently be an A outcome (Wales et al. 2011). Define A outcome

The existing condition within the Lower Joseph watershed contains 19,362 acres of source habitat for the Northern Goshawk. This corresponds to about 55% of the potential habitat. The RV for this species that was calculated as a mean across all watersheds on the Wallowa-Whitman NF (Forest Plan Revision, Wales et al. 2012) found the range to be 1-46%. Currently goshawk habitat is above the HRV in the Lower Joseph project area.

Effects to Northern Goshawk

Alternative 1 –

Alternative 2 – As a total the amount of source habitat for goshawks is reduced by 256 acres. Within the area that is defined by tree size and canopy closure as source habitat after implementation of Alternative 2, about 8,205 acres will be treated by commercial harvest but still meet the definition of source habitat. On approximately 4000 acres of source habitat that is harvested, trees >=21" dbh may be harvested. Source habitat that has been harvested will likely me of lower quality due to the loss of canopy closure, loss of large trees, and loss of large snags and logs due to safety and logging systems.

Although trees with mistletoe are likely to be removed in all harvest units, especially in the prescriptions 'Intermediate Treatments' (153 acres), the removal of trees with dwarf mistletoe brooms during thinning treatment will likely be detrimental to northern goshawk and other species that nest in mistletoe brooms (Bull and others 1997).

The closure of an additional XX miles above that proposed in Alternative 1 should benefit Northern Goshawks, as human disturbance has been documented to negatively affect this species.

The amount of source habitat remains with the RV (1-46%)

Alternative 3 - As a total the amount of source habitat for goshawks is reduced by 2,845 acres. Although the overall area with harvesting in Alternative 3 is less than in Alternative 2, the resulting amount of source habitat for goshawks, appears to be lower. In Alternative 2 more acres of vegetation that is currently in the size class of medium (10-15"), and post-harvest the quadratic mean diameter of the stand actually increases and moves the stand in to the next size class (15-20" dbh, while also maintaining >40% canopy closure. As described in Alternative 2, although these stands meet the definition of source habitat, it is likely the quality of the habitat is reduced.

Within the area that is defined by tree size and canopy closure as source habitat after implementation of Alternative 3, about 2,681 acres will be treated by commercial harvest but still meet the definition of source habitat. In alternative 3, no trees >=21" dbh may be harvested which will provide for higher quality habitat within the treated areas, as large trees are an important habitat component for goshawks. Source habitat that has been harvested will likely me of lower quality due to the loss of canopy closure, and loss of large snags and logs due to safety and logging systems.

Although trees with mistletoe are likely to be removed in all harvest units, especially in the prescriptions 'Intermediate Treatments' (38 acres), the removal of trees with dwarf mistletoe brooms during thinning treatment will likely be detrimental to northern goshawk and other species that nest in mistletoe brooms (Bull and others 1997).

The closure of an additional XX miles above that proposed in Alternative 1 should benefit Northern Goshawks, as human disturbance has been documented to negatively affect this species.

The amount of source habitat remains with the RV (1-46%)

Table [11]. Summary of impacts to Northern Goshawk habitat (acres) by Alternative

	Existing	Alternative 2	Alternative 3
Project Area – source habitat	19,362	19,106	16,517
Acres treated – source habitat maintained		8,205	2,681
Wallowa-Whitman National Forest – source habitat	**440,273**		

Northern Goshawk	EC	A2	A3	Comment
Source Habitat (acres)	19,362	19,106	16,517	
% HRV	55.3%	54.6%	47.2%	The current condition as well as the outcome of all alternatives, maintain source habitat within the RV (1-46%)
Acres source habitat with commercial harvest	0	8205	2681	Acres of Northern goshawk habitat that has been commercially harvested are likely lower quality.
% source habitat with commercial treatment	0	42.9%	16.2%	Northern goshawk habitat that has been commercially harvested, are likely lower quality.
Acres of source habitat without commercial treatment	19,362	10,901	13,836	Northern goshawk habitat that has not been commercially harvested, are likely higher quality habitat.
% HRV of source habitat not treated	55.5%	31.2%	39.7%	Northern goshawk habitat that has not been commercially treated is within the RV. It is expected that within 10-30 years the habitats that were treated and are of lesser quality will transition to higher quality source habitat.
Acres of source habitat with potential for trees >=21" dbh removed	0	3,984	0	Large trees provide an important habitat component for goshawks.

Cumulative Effects to Northern Goshawk

Table [12]. Summary of cumulative impacts to American marten habitat (acres).

	Current Project	Project X	Project X

Acres of habitat affected	4000	3106	2601
Percent of habitat in analysis area affected	9%	7%	6%

Example wording for no cumulative effects:
These (type) projects are not expected to result in cumulative effects in combination with the XXX Project, because they will have no effect on species habitat. No short- or long-term Northern Goshawk population decrease would occur; therefore, additive cumulative effects are not anticipated.

Conclusions for Northern Goshawk

Rocky Mountain Elk

Existing Conditions for Rocky Mountain Elk

Rocky Mountain elk have been selected as an indicator of habitat diversity, interspersion of cover and forage areas, and security habitat provided by areas of low human disturbance. Elk management on the Wallowa-Whitman National Forest is a cooperative effort between the Forest Service and the Oregon Department of Fish and Wildlife (ODFW). The Forest Service manages habitat while ODFW manages populations by setting seasons, harvest limits, and goals for individual Wildlife Management Units (WMU).

Within the Lower Joseph project area there are parts of 2 WMU: Chesnimus and Sled Springs (Figure X). Table XX shows the recent trend in populations and the management objectives for the two management units. Currently the populations and bull/100 cows ratios are exceeding the management objectives set by ODFW.

According to ODFW (pers. Comm. 2014), the Chesnimnus unit is currently 40% over population management objective with up to 70% of the population occurring on Zumwalt prairie private lands. The ODFW is currently trying to reduce elk numbers and return the elk population to management objective of 3500 by harvesting antlerless elk on Zumwalt private lands. Elk numbers on the National Forests are much below desired levels, so very little antlerless elk harvest occurs on the national forest portion of the Chesnimnus unit. Managing road density is important for security areas and bull escapement during hunting seasons.

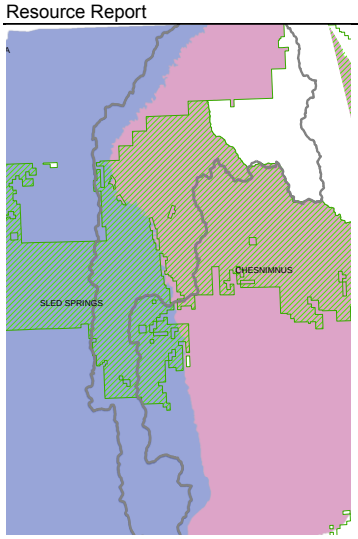


Figure XX – ODFW Management Units within the Lower Joseph project area

Table 3. Population Trend data Rocky Mountain Elk (ODFW 2014)

Management Unit		Population	Bulls/100 cow
Chesnimnus	**MO***	**3,500**	**10**
	2010	3,700	13
	2011	5,300	15
	2012	5,300	13
	2013	5,200	14
	2014	5,000	14
Sled Springs	**MO***	**2,750**	**10**
	2010	2,500	4
	2011	2,700	10
	2012	2,700	10
	2013	3,000	16
	2014	3,100	16

*MO = Management Objective (ODFW)

Research conducted at the Starkey Experimental Forest and Range and associated research sites is providing new insights regarding the importance of maintaining adequate nutritional resources for elk (Cook et al. 2013) , and of minimizing human disturbance effects through effective management of motorized access and cover (Naylor et al. 2009, Rowland et al 2000). Higher nutritional resources are generally concentrated in elk forage areas, defined as areas with less than 40% overhead canopy cover. Highest nutritional resources are often particularly concentrated in areas with less than 20% overhead canopy cover, such as in grasslands, shrublands, and forests of the stand initiation structural stage, recognizing that nutritional resources in these areas will vary with season of elk use and forage phenology.

Elk use of forage areas often depends on their proximity to cover areas (to forest stands with overhead canopy cover 40% or higher) and the distance to roads and trails open to motorized uses. Forage areas within 100 yards of cover areas are most heavily used by elk, as are forage areas farther than 1000 yards from roads or trails open to motorized uses. In addition, maintenance of adequate cover areas provides security for elk during hunting seasons and reduces elk vulnerability to harvest, such that harvest goals for elk can be met but not exceeded. Whether cover areas provide security

for elk during hunting seasons, however, often requires motorized closures of large networks of roads and trails during hunting seasons. The need for motorized closures of many road and trail networks to provide effective security for elk during hunting seasons is higher on landscapes dominated by flat, open terrain, and lower in areas of steep, convex topography with more cover.

Desired Condition: In general, a mosaic of forage and cover areas in a given landscape, with minimal or no motorized access through forage areas, results in high to optimal elk use during any given season. This would be the desired condition for landscapes where elk use is promoted, as identified in coordination with state wildlife agencies. For many winter ranges, this desired condition would emphasize the maintenance of existing cover areas, which often compose smaller portions of these landscapes, while also focusing on minimizing or eliminating motorized access and uses on winter ranges during the winter period. For many spring, summer, and fall ranges, this desired condition would emphasize the maintenance of adequate forage areas close to cover and far from roads and trails open to motorized uses. For landscapes where hunting occurs, the desired condition would emphasize motorized access restrictions on roads and trails during hunting seasons to a degree that elk can effectively use cover and topography as security. This approach at managing the desired condition would place more emphasis on motorized closures of roads and trails during hunting seasons for landscapes that are flat and open, and less emphasis on those that are steep and have more cover, as identified in coordination with state wildlife agencies.

In meeting desired conditions for elk, the maintenance of a mosaic of elk forage and cover areas for a given season and landscape will vary with the biophysical potential of each landscape to sustain cover areas, as well as the capability to maintain or enhance adequate forage areas that provide higher nutritional resources far from motorized access. These desired conditions apply to landscapes where high use is promoted, as identified in partnership with state wildlife agencies for each landscape and season of elk use. Not all landscapes or seasons will have a high elk use that is desired, owing to the need to minimize elk damage to adjacent private lands, to reduce fire risk in wildland urban interface (WUI) areas, or to meet other goals of management across mixed land ownerships.

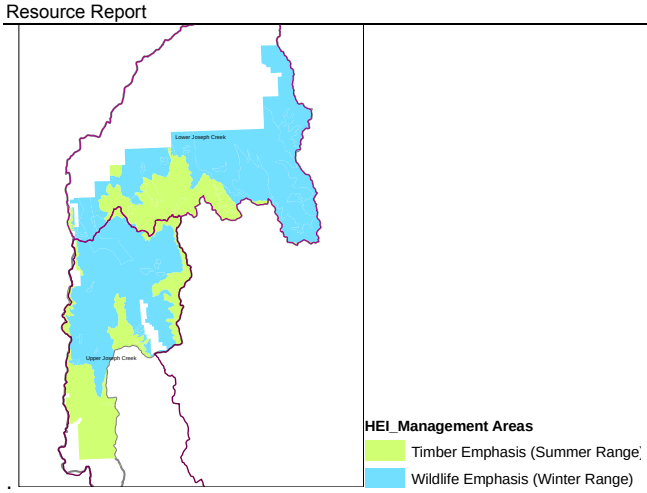
Potential elk habitat effectiveness may be evaluated using the Habitat Effectiveness Index (HEI; Thomas et al. 1988). This model considers the density of open roads, the availability of cover habitat (see definitions; Forest Plan 1990, 4-57), the distribution and juxtaposition of cover and forage across the landscape, forage quantity and quality.

The Forest Plan establishes standards for wildlife habitat, and more specifically elk habitat, on the Forest. The Lower Joseph analysis area provides year round habitat for big game; winter range lies along the northern and western portion of the analysis area, transitional range is mid-slope and summer range lies along the central portion of the analysis area.

Habitat Effectiveness Index: HEI values area based on a comprehensive elk habitat model developed by Thomas et al. (1988). These values consider the interaction of size and spacing of cover and forage areas, density of roads open to vehicle traffic, forage quantity and quality, and the quality of cover. For this report, HEI values were calculated without a forage quality value since actual data does not exist.

The Lower Joseph project area was analyzed using a habitat effectiveness model (Thomas et al. 1988) to assess the quality of elk habitat. The HEI model evaluates size and spacing of cover and forage areas, density of open roads, quantity and quality of forage available to elk and cover quality. Forage data is unavailable and is not included in the total HEI value. To provide for a more landscape-scale approach, and therefore more meaningful results, HEI values were calculated on at the scale of the watershed and 2 main Management Areas distinguishing approximate summer and winter ranges within both the Lower Joseph and Upper Joseph Watershed. The smaller management areas (e.g. MA 15 Old Growth) were lumped into the surrounding larger ‘summer’ or ‘winter’ range.

Currently the Lower Joseph project area is meeting the LRMP direction of HEI >=0.5 in the MA 1(timber emphasis, summer range) areas.



A cover:forage ratio is used to describe the relative amounts of cover to forage and while the optimal ratio of cover to forage is 40:60 (Thomas 1979). The LRMP establishes a minimum standard that at least 30% of forested land be maintained as cover in the 'Timber Emphasis areas (MA1, MA11). For this analysis we defined 'Forage' as areas with <40% canopy closure. 'Marginal' cover is defined as areas with 40-60% canopy cover, and 'Satisfactory' cover refers to areas with >=60% canopy closure. We used these definitions as that was the scale of the data available.

Currently in both the Lower and Upper Joseph watersheds in the summer range there is >=55% cover, in the MA1 (timber emphasis, summer range) areas.

Table XX – HEI and Cover percentages for the existing conditions within the Lower Joseph project area.

Existing Condition		Timber Emphasis (summer range)	Wildlife Emphasis (winter range)	Timber Emphasis (summer range)	Wildlife Emphasis (winter range)
	FP direction	Lower Josesph Watershed		Upper Joseph Watershed	
Total Cover %	MA 1 >= 30% (summer range)	77%	23%	55%	30%
Cover:Forage		77:23	23:77	55:45	30:70
Marginal Cover %		35%	11%	26%	14%
Satisfactory Cover %		42%	13%	28%	16%
Forage %		23%	77%	45%	70%
Marginal Acres		4,634	4,078	4,408	4,134
Satisfacctory acres		5,583	4,901	4,743	4,756
Forage acres		3,047	29,750	7,589	20,570
HEI	MA 1 >= 0.5 (summer range)	0.63	0.63	0.57	0.71

Road Densities

Motor vehicle access and associated human activities are widely recognized as an important factor in how wild, free-ranging elk distribute themselves across available habitat. As the amount and frequency of motor vehicle access increases, habitat effectiveness decreases (Lyon 1983). A literature review by Gagnon et al. (2007) found that 84 percent of 53 literature sources identified an effect to elk from motor vehicle traffic. Gagnon et al. goes on to explain that the remaining 16 percent of sources claiming little effect to elk from traffic cited differences in ungulate populations, ungulate behavior, or landscape variables that explained the reduced effect from traffic. In the book, North American Elk Ecology and Management (ed. Toweill and Thomas 2002), Lyon and Christensen characterize the body of research showing roads having a "consistent year-round influence" on elk's use of the environment as "overwhelming."

Recreational activities on public lands are increasing as human populations increase, and this growth in disturbance from recreation can decrease animal fitness or expose animals to higher rates of mortality (Knight and Gutzwiller 1995). Since the 1950s, road construction on public lands of the western United States has provided access, resulting in increased use by people in areas that were previously undisturbed (Trombulak and Frissell 2000). Examples of increased recreational activities include mushroom and berry picking, firewood removal, hunting, fishing, driving for pleasure, mountain biking, OHV use, cross-country skiing, back packing, camping, and snowmobiling. Elk move away from roads open to the public (Rowland et al. 2000, 2004) with higher rates of traffic (Wisdom 1998, 2004), away from off-road recreation activities, such as ATVs use and mountain bike riding (Wisdom et al. 2004), and in response to hunting (Conner et al. 2001, Grigg 2007, Vieira et al. 2003, Wertz et al. 2001).

Within this project area there is the Chesnimnus Cooperative Travel Management Area. This is a joint agreement between the Wallowa-Whitman NF and the Oregon Department of Fish and Wildlife where there are identified seasonal road closures. The closures are in effect 3 days prior to the rifle bull elk season through the end of the rifle bull season (approximately 10/25 – 11/27). The objectives of this closure are to protect soils and wildlife habitat, minimize harassment of wildlife, maintain adequate bull escapement, and promote quality hunting.

Additionally, the issue of elk relocating from public land to adjacent private lands with fewer open roads during the spring, summer, and fall is occurring in several places across the Wallowa-Whitman NF. Within the Chesnimnus unit, there is a large segment of the elk population that is currently using the Zumwalt Prairie year –round, this large area is privately owned and adjacent to the NFS. A consequence of large numbers of elk inhabiting private winter ranges year round is that they are not available to the public who wish to hunt or view them on the WWNF during the spring, summer, and fall.

Excessive open road densities have deleterious effects on habitat effectiveness for elk by taking land out of production (1 road mile equals 4 acres of land), reducing the effectiveness of cover and increasing disturbance to elk).

The LRMP direction on Road densities by management areas calculated at a subwatershed is: MA1 <= 2.5 mi/mi2; MA3 <=1.5 mi/mi2; and HCNRA <=1.5 mi/mi2. The road density estimate does not take into account off-road vehicle use on OHV trails, cross-country travel and on closed roads. The current road densities by Management Area per subwatershed for the Lower Joseph project area are shown in Table RoadDensity. Currently on X out of X subwatersheds, open road densities are exceeding LRMP direction.

Table RoadDensity. Current road densities by management area and subwatershed in the Lower Joseph project area.

Subwatershed		MA 1 Open Road Density (mi/mi²)	MA 3 Open Road Density (mi/mi²)	HCNRA CMP Open Road Density (mi/mi²)
	Forest Plan Standard	2.5	1.5	1.35
	EC (was A1)	***2.8***	1.2	***1.37***
	A1 (=A2 before add)	1.6	-	1.08
	A2	1.6	-	1.08
Broady Creek	A3	***2.7***	0.3	1.12
	EC (was A1)	***4.3***	0.9	
	A1	***3.7***	0.7	
	A2	3.15	0.4	
Cougar Creek	A3	***3.5***	0.8	
	EC (was A1)	***4.1***	0.2	
	A1	***4.0***	0.2	
	A2	2.91	0.2	
Davis Creek	A3	***4.0***	0.2	
	EC (was A1)			***1.74***
	A1			***1.74***
	A2			***1.74***
Horse Creek	A3			***1.74***
	EC (was A1)			0.54
	A1			0.54
	A2			0.54
Lower Cottonwood Creek	A3			0.54
	EC	***3.0***	0.3	
	A1	***2.7***	0.3	
	A2	***2.7***	0.3	
Lower Swamp Creek	A3	***3.0***	0.3	
	EC	***2.5***	0.2	-
	A1	1.2	0.2	
	A2	1.2	0.2	-
Peavine Creek	A3	***2.5***	0.2	-
Rush Creek	EC	***4.1***	0.9	-

	A1	***3.3***	0.5	
	A2	3.0	0.5	-
	A3	***3.9***	0.8	-
	EC	***4.3***	1.4	
	A1	***3.6***	1.2	
	A2	2.83	1.2	
Sumac Creek	A3	***4.0***	1.3	
	EC			0.66
	A1			0.74
	A2			0.74
Upper Cottonwood Creek	A3			0.66

Effects to Rocky Mountain Elk

		Timber Emphasis (MA1, summer range)			Wildlife Emphasis (winter range)			Timber Emphasis (MA1, summer range)			Wildlife Emphasis (winter range)		
		Lower Josesph Watershed			Lower Josesph Watershed			Upper Joseph Watershed			Upper Joseph Watershed		
	FP direction or assumption	EC/A1	Alt 2	Alt 3	EC/A1	Alt 2	Alt 3	EC/A1	Alt 2	Alt 3	EC/A1	Alt 2	Alt 3
Total Cover %	MA 1* >= 30%	77%	60%	62%	23%	16%	23%	55%	33%	36%	30%	22%	24%
HEI	MA 1* >= 0.5	0.63	0.61	0.59	0.63	0.61	0.64	0.57	0.55	0.57	0.71	0.69	0.70

*MA1 - generally is the area in Timber emphasis - especially in the Upper Joseph watershed.

		Timber Emphasis (MA1,summer range)			Wildlife Emphasis (winter range)			Timber Emphasis (MA1,summer range)			Wildlife Emphasis (winter range)		
		Lower Josesph Watershed			Lower Josesph Watershed			Upper Joseph Watershed			Upper Joseph Watershed		
	FP direction	Alt 1	Alt 2	Alt 3	Alt 1	Alt 2	Alt 3	Alt 1	Alt 2	Alt 3	Alt 1	Alt 2	Alt 3
Total Cover %	>=30% (MA1)	77%	60%	62%	23%	16%	23%	55%	33%	36%	30%	22%	24%
Loss of cover (to forage) from Existing		-	2,273	2,038	-	2,955	122	-	3,717	3,110	-	2,329	1,718

		Timber Emphasis (MA1 ,summer range)			Wildlife Emphasis (winter range)			Timber Emphasis (MA1, summer range)			Wildlife Emphasis (winter range)		
		Lower Josesph Watershed			Lower Josesph Watershed			Upper Joseph Watershed			Upper Joseph Watershed		
	FP direction	Alt1	Alt 2	Alt 3	Alt1	Alt 2	Alt 3	Alt1	Alt 2	Alt 3	Alt1	Alt 2	Alt 3
Total Cover %	>=30% (MA1)	77%	60%	62%	23%	16%	23%	55%	33%	36%	30%	22%	24%
Cover:Forage	(40:60)	77:23	60:40	62:38	23:77	16:84	23:77	'55:45	33:68	36:64	30:70	22:78	24:76
Marginal Cover %		35%	38%	36%	11%	10%	11%	26%	22%	23%	14%	13%	13%
Satisfactory Cover %		42%	22%	26%	13%	6%	12%	28%	11%	14%	16%	9%	12%
Forage %		23%	40%	38%	77%	84%	77%	45%	68%	64%	70%	78%	76%
Marginal Acres		4,634	5,045	4,727	4,078	3,667	4,051	4,408	3,628	3,763	4,134	3,891	3,785
Satisfactory acres		5,583	2,899	3,452	4,901	2,356	4,805	4,743	1,806	2,279	4,756	2,671	3,387
Forage acres		3,047	5,319	5,084	29,750	32,705	29,872	7,589	11,306	10,699	20,570	22,898	22,287
HEI	MA 1 >= 0.5	0.63	0.61	0.59	0.63	0.61	0.64	0.57	0.55	0.57	0.71	0.69	0.70

Alternative 1: Without management activities, elk cover and forage habitat would not be altered and short-term disturbances (associated with treatment activities) to elk habitat would not occur. The overall area providing cover remains higher than either of the 2 action alternatives

Implementing past road management decisions would reduce road densities in X subwatersheds and thus moving closer to LRMP direction. Subwatersheds XXXXX, SSSSS, in these management areas would have no reduction in road densities.

Alternative 2 – The HEI standard of >=05 on MA1 is met in both the Lower and Upper Joseph watersheds. The percent cover on the summer ranges remains above 30%, the LRMP direction, though is reduced to 33% in the Upper Joseph watershed. The reduced cover may increase forage quantity and quality especially in the spring. However, this reduced cover may decrease hiding cover (>=40% canopy closure), particularly in the Upper Joseph watershed and the entire winter range habitat. In the Lower Joseph watershed, on the winter ranges, the percent cover is reduced to 16%.

Alternative 2 removes the most area with a reduction of areas in marginal and/or satisfactory cover on in the Lower Joseph – timber emphasis (summer range) on approximately 2,273 acres. Both, harvest treatment and prescribed burning may also contribute an increase in forage quantity and quality, especially in the spring.

Research results on the effects of forest restoration treatments (thinning followed by primarily broadcast burning) in northeast Oregon have found that elk will likely respond positively to treatment in the spring due to an increased cover and abundance of some important forage species, while the opposite may be true for during the hotter summer months (Long et al. 2008a, Long et al.2008b). In the summer areas with relatively open canopy cover, most grass species and many forb species have cured or senesced by about mid-July as a result of increased exposure to direct sunlight. Within untreated areas or areas with denser canopy cover, important forage species often persist for several weeks longer. The authors suggest that maintaining a mosaic of treated and untreated forest habitats across the landscape will likely be beneficial for foraging habitat. Recently research has shown that the adequacy of summer nutrition in the Pacific Northwest drives the productivity of elk and probably other ungulate populations (Cook et al. 2013).

Although this project would temporarily increase road density in the analysis area by constructing XX miles of temporary roads and to reopening XX miles, and post-project road densities in some subwatersheds remain above Forest standards, additionally of concern within the analysis area is the unregulated OHV and full-sized vehicle use of closed roads which has been shown to negatively affect elk and elk habitat. Together with the loss of cover and higher road densities particularly in the Davis, Lower Swamp Creek subwatersheds, elk distribution and habitat effectiveness may be negatively affected.

To reduce disturbance to big game on winter ranges timber sale activities, including log haul, considerations to minimize activities during periods of low temperatures and accumulated snow depths, typically from December 15 through March 31st will be taken.

Alternative 3 – Similar to alternative 2 the LRMP standards for HEI and percent cover in MA1 areas are met. The HEI standard of >=05 on MA1 is met in both the Lower and Upper Joseph watersheds. The percent cover on the summer ranges remains above 30%. The reduced cover may increase forage quantity and quality especially in the spring. However, this reduced cover may decrease hiding cover (>=40% canopy closure), particularly in the Upper Joseph watershed and the entire winter range habitat. The reduced harvest in Alternative 3 provides for more cover across the planning area than in Alternative 2.

Alternative 3 changes about 7,000 acres of cover to forage across the entire planning area (about 40% fewer acres than alternative 2). Both, harvest treatments and prescribed burning may also contribute an increase in forage quantity and quality, especially in the spring.

Research results on the effects of forest restoration treatments (thinning followed by primarily broadcast burning) in northeast Oregon have found that elk will likely respond positively to treatment in the spring due to an increased cover and abundance of some important forage species, while the opposite may be true for during the hotter summer months (Long et al. 2, Long et al.). In the summer areas with relatively open canopy cover, most grass species and many forb species have cured or senesced by about mid-July as a result of increased exposure to direct sunlight. Within untreated areas, or areas with denser canopy cover, important forage species often persist for several weeks longer. The authors suggest that maintaining a mosaic of treated and untreated forest habitats across the landscape will likely be beneficial for foraging habitat. Recently research has shown that the adequacy of summer nutrition in the Pacific Northwest drives the productivity of elk and probably other ungulate populations (Cook et al. 2013).

Alternative 3 proposes higher miles of open road than in Alternative 2. The project would temporarily increase open roads by about 12.5 miles and reopening many (XX?) miles closed roads for haul routes. Post-project road densities in X out 10 subwatersheds remain above Forest standards, and little change from the existing condition. Excessive open roads have negative effects on habitat effectiveness by taking land out of production,

reducing the effectiveness of cover, and increasing disturbance to elk. Additionally of concern within the analysis area is the unregulated OHV and full-sized vehicle use of closed roads which has been shown to negatively affect elk and elk habitat. Together with the loss of cover and higher road densities particularly in the Davis, Lower Swamp Creek subwatersheds, elk distribution and habitat effectiveness may be negatively affected.

To reduce disturbance to big game on winter ranges timber sale activities, including log haul, considerations to minimize activities during periods of low temperatures and accumulated snow depths, typically from December 15 through March 31st will be taken.

Subwatershed Name	LRMP/ CMP S&G	Upper Cottonwood Creek			Horse Creek			Lower Cottonwood Creek			Broady Creek			Cougar Creek			Davis Creek			Lower Swamp Creek			Peavine Creek			Rush Creek			Sumac Creek		
		A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3
MA 1 Area (mi²)		0.1	0.1	0.1							8.3	8.3	8.3	4.4	4.4	4.4	6.2	6.2	6.2	9.8	9.8	9.8	7.6	7.6	7.6	3.0	3.0	3.0	5.3	5.3	5.3
MA 1 Open Roads (mi.)		1.8	29.2	1.8							23.6	13.0	22.3	19.1	16.2	15.6	25.4	25.0	25.0	29.6	26.4	29.2	19.3	9.2	18.8	12.2	9.7	11.7	22.9	19.1	21.3
MA 1 Roads Open Year Round (mi.)		1.6	1.6	1.6							10.4	7.2	10.4	6.6	5.7	5.8	25.4	25.0	25.0	29.6	26.4	29.2	2.2	2.2	2.2	3.0	3.0	3.0	14.3	10.6	12.1
MA 1 Seasonal Open Road Density (mi/mi²)	**2.50**	*14.9*	*14.9*	*14.9*							1.2	0.9	1.2	1.5	1.3	1.3	***4.1***	***4.0***	***4.0***	***3.0***	***2.7***	***3.0***	0.3	0.3	0.3	1.0	1.0	1.0	***2.7***	2.0	2.3
MA 1 Open Road Density (mi/mi²)	**2.50**	*16.6*	*####*	*16.6*							***2.8***	1.6	***2.7***	***4.3***	***3.7***	***3.5***	***4.1***	***4.0***	***4.0***	***3.0***	***2.7***	***3.0***	***2.5***	1.2	2.5	***4.1***	***3.3***	***3.9***	***4.3***	***3.6***	***4.0***
MA 3 Area (mi²)											2.7	2.7	2.7	14.1	14.1	14.1	6.2	6.2	6.2	13.3	13.3	13.3	7.4	7.4	7.4	5.8	5.8	5.8	9.7	9.7	9.7
MA 3 Open Roads (mi.)											3.1	-	0.9	12.1	9.4	10.6	1.3	1.3	1.3	3.8	3.8	3.8	1.7	1.3	1.7	5.3	3.2	4.4	14.0	11.2	12.7
MA 3 Roads Open Year Round (mi.)											-	-	-	5.1	2.8	4.4	1.3	1.3	1.3	3.8	3.8	3.8	1.0	1.0	1.0	2.8	2.8	2.8	6.5	3.6	5.0
MA 3 Seasonal Open Road Density (mi/mi²)	**1.50**										-	-	-	0.4	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.1	0.1	0.1	0.5	0.5	0.5	0.7	0.4	0.5
MA 3 Open Road Density (mi/mi²)	**1.50**										1.2	-	0.3	0.9	0.7	0.8	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.9	0.5	0.8	1.4	1.2	1.3
MA 7 Area (mi²)														1.8	1.8	1.8				0.2	0.2	0.2	1.4	1.4	1.4						
MA 7 Open Roads (mi.)														-	-	-				-	-	-	0.0	0.0	0.0						
MA 7 Roads Open Year Round (mi.)														-	-	-				-	-	-	0.0	0.0	0.0						
MA 7 Seasonal Open Road Density (mi/mi²)	**1.35**													-	-	-				-	-	-	0.0	0.0	0.0						
MA 7 Open Road Density (mi/mi²)	**1.35**													-	-	-				-	-	-	0.0	0.0	0.0						
MA 9 Area (mi²)		0.2	0.2	0.2	7.3	7.3	7.3	0.1	0.1	0.1																					
MA 10 Area (mi²)		11.9	11.9	11.9				7.0	7.0	7.0	3.2	3.2	3.2																		
MA 11 Area (mi²)		7.0	7.0	7.0	1.7	1.7	1.7	3.4	3.4	3.4	1.8	1.8	1.8																		
MA 12 Area (mi²)																							0.9	0.9	0.9	0.1	0.1	0.1			
MA 12-7 Area (mi²)																							0.2	0.2	0.2						
HCNRA CMP Area (mi²)		19.0	19.0	19.0	9.0	9.0	9.0	10.5	10.5	10.5	5.0	5.0	5.0										1.1	1.1	1.1	0.1	0.1	0.1			
MA 9 Open Roads (mi.)		0.4	0.4	0.4	9.3	9.3	9.3	0.3	0.3	0.3																					
MA 10 Open Roads (mi.)		0.7	2.2	0.7				0.5	0.5	0.5	2.8	1.6	1.6																		
MA 11 Open Roads (mi.)		11.5	11.5	11.5	6.4	6.4	6.4	4.9	4.9	4.9	4.0	3.8	4.0																		
MA 12 Open Roads (mi.)																							-	-	-	-	-	-			
MA 12-7 Open Roads (mi.)																							-	-	-						
HCNRA CMP Open Roads (mi.)		12.6	14.1	12.6	15.6	15.6	15.6	5.7	5.7	5.7	6.8	5.4	5.6										-	-	-	-	-	-			
MA 9 Roads Open Year Round (mi.)		-	-	-	5.9	5.9	5.9	-	-	-																					
MA 11 Roads Open Year Round (mi.)		3.5	3.5	3.5	3.0	3.0	3.0	-	-	-	0.8	0.8	0.8																		
HCNRA CMP Roads Open Year Round (mi.)		3.5	3.5	3.5	8.9	8.9	8.9	-	-	-	0.8	0.8	0.8																		
MA 9 Seasonal Open Road Density (mi/mi²)	**1.35**	-	-	-	0.8	0.8	0.8	-	-	-																					
MA 11 Seasonal Open Road Density (mi/mi²)	**1.35**	0.5	0.5	0.5	***1.8***	***1.8***	***1.8***	-	-	-	0.5	0.5	0.5																		
HCNRA CMP Seasonal Open Road Density (mi/mi²)	**1.35**	0.2	0.2	0.2	1.0	1.0	1.0	-	-	-	0.2	0.2	0.2																		
MA 9 Open Road Density (mi/mi²)	**1.35**	***2.3***	***2.3***	***2.3***	1.3	1.3	1.3	***2.8***	***2.8***	***2.8***																					
MA 10 Open Road Density (mi/mi²)	**1.35**	0.1	0.2	0.1				0.1	0.1	0.1	0.9	0.5	0.5																		
MA 11 Open Road Density (mi/mi²)	**1.35**	***1.7***	***1.7***	***1.7***	***3.7***	***3.7***	***3.7***	***1.4***	***1.4***	***1.4***	***2.2***	***2.1***	***2.2***																		
MA 12 Open Road Density (mi/mi²)	**1.35**																						-	-	-	-	-	-			
MA 12-7 Open Road Density (mi/mi²)	**1.35**																						-	-	-						
HCNRA CMP Open Road Density (mi/mi²)	**1.35**	0.7	0.7	0.7	***1.7***	***1.7***	***1.7***	0.5	0.5	0.5	***1.4***	1.1	1.1										-	-	-	-	-	-			
FS Lands (mi²)		19.1	19.1	19.1	9.0	9.0	9.0	10.5	10.5	10.5	16.0	16.0	16.0	20.3	20.3	20.3	12.4	12.4	12.4	23.3	23.3	23.3	17.6	17.6	17.6	8.9	8.9	8.9	15.0	15.0	15.0
Total Open Roads on FS Lands (mi.)		14.4	43.3	14.4	15.6	15.6	15.6	5.7	5.7	5.7	33.5	18.4	28.7	31.2	25.6	26.2	26.7	26.3	26.3	33.4	30.2	33.0	20.9	10.5	20.5	17.4	12.8	16.1	36.9	30.3	33.9
Total Roads Open Year Round (mi.)		5.1	5.1	5.1	8.9	8.9	8.9	-	-	-	11.2	8.1	11.2	11.7	8.5	10.2	26.7	26.3	26.3	33.4	30.2	33.0	3.2	3.2	3.2	5.8	5.8	5.8	20.8	14.2	17.1
Seasonal Open Road Density on FS Lands (mi/mi²)		0.3	0.3	0.3	1.0	1.0	1.0	-	-	-	0.7	0.5	0.7	0.6	0.4	0.5	2.1	2.1	2.1	1.4	1.3	1.4	0.2	0.2	0.2	0.7	0.7	0.7	1.4	0.9	1.1
Open Road Density on FS Lands (mi/mi²)		0.8	2.3	0.8	1.7	1.7	1.7	0.5	0.5	0.5	2.1	1.1	1.8	1.5	1.3	1.3	2.1	2.1	2.1	1.4	1.3	1.4	1.2	0.6	1.2	2.0	1.4	1.8	2.5	2.0	2.3

Cumulative Effects to Rocky Mountain Elk

Under all Alternatives, active grazing allotments could result in ungulate competition for forage especially during late summer. Forage utilization standards are monitored and generally meet Forest Plan standards and guides. The Lower Joseph Range AMP EA was recently completed ?? that addressed cattle distribution. Meeting livestock forage standards are expected to provide adequate forage for elk; thereby reducing ungulate competition late in the season.

Conclusions for Rocky Mountain Elk

The National Forest Management Act (1976) requires that habitat exist to provide for viable populations of all native and desires non-native vertebrates. Elk is a game species that is managed on a management objective (M.O.) basis. Management objectives were developed to consider not only the carrying capacity of the lands, but also the elk population size that would provide for all huntable surplus, and tolerance levels of ranchers, farmers, and other interests that may sometimes compete with elk for forage and space. Biologically, a population that is managed around a M.O. is much larger than a minimum viable population. A minimal viable population represents the smallest population size that can persist over the long term. Historically there were game species, including elk, which warranted serious conservation concerns due to depressed populations and range contractions resulting from unregulated market and sport hunting and loss of habitat. Many of the factors that contributed to the decline of large wild ungulates in the past do not exist today. Currently, elk populations on the WWNF are regulated by hunting and predation. Elk numbers are substantially higher than what would constitute a concern over species viability.

Old-Growth Management Areas (OGMAs), Late and Old-Structure (LOS) Forest Habitat , and Connectivity Corridors

(Measures: Proportion of acres of impacted in OGMAs, LOS, and connectivity corridors

OGMAs

Existing Conditions: OGMAs

The Forest Plan designated OGMAs (i.e. Management Area 15) and provides Standards and Guidelines (Forest Plan 4-89-91) for their management. Three species were selected in the LRMP to represent Old-growth habitats as Management indicator species: Pileated woodpecker, American marten and Northern goshawk, these species are discussed in the MIS section below

There are 31 Forest Plan allocated OGMA's (Forest Plan MA-15) in the Lower Joseph project area. These stands are intended to maintain habitat diversity, preserve aesthetic values, and to provide old-growth habitat for wildlife. In total, the area within these OGMA's is 3081 acres of which 111 acres are not forested, for a total of 2907 forested acres. See table X for a description of the existing structural stages.

Existing Condition - MA 15 (Acres)							
	OFMS	OFSS	YFMS	UR	SE	SI	Total
Ma15 total	1,481	14	206	678	592	0	2,970
Dry	913		142	397	417	0	1,869
MST	567	14	65	281	174		1,101

Effects to OGMAs (MA-15

Table XX lists the acres of OGMAs treated by alternative. The activities proposed in the OGMAs all involve thinning and favoring the retention of ponderosa pine.

Alternative 1 (No action) – No treatment will happen in any of the OGMAs.

Alternative 2 includes commercial harvest within portions of 11 OGMAs. Commercial harvest is to occur on 792 acres. Prescribed fire treatments are common to both alternatives.

A2 MA15 - commercial harvest		
Prescription	Dry PVG	Moist PVG
STS_OG_Low	29	
STS_OG_Mod	713	50

Alternative 3 proposes no commercial treatment within OGMAs.. Prescribed fire treatments are common to both action alternatives.

PVG	Time Period/ Alternative	% OFMS	% OFSS	% YFMS	% UR	% SE	%SI
DRY	Existing Condition	48.9	-	7.6	21.2	22.3	0.0
	Alt 1	48.9	-	7.6	21.2	22.3	0.0
	Alt 2	55.2	0.1	2.5	26.2	15.9	0.0
	Alt 3	48.9	-	7.6	21.2	22.3	0.0
Moist	EC	51.5	1.3	5.9	25.5	15.8	-
	A1	51.5	1.3	5.9	25.5	15.8	-
	A2	51.5	1.4	5.9	28.6	12.7	-
	A3	51.5	1.3	5.9	25.5	15.8	-

LOS Habitat

Existing Condition: LOS Habitat

Late and old structure forest habitat is defined by the Eastside Screens as multi-strata stands with large trees and single strata stands with large trees. A large tree is defined as being ≥ 21 inches dbh. Multi-stratum stands are comprised of two or more tree canopy layers and two or more cohorts of trees. Medium and large sized trees dominate the overstory but trees of all size classes may be present. Stand structure and tree sizes are diverse. Single stratum LOS stands are comprised of a single dominant canopy stratum consisting of medium or large sized trees. Large trees are common. Young trees are absent or few in the understory. The stand may appear "park-like."

The Large-open structural stage of the Dry PVG is below the Historical Range of Variability (HRV), defined as conditions in the pre-European settlement area. Refer to pages XXXX for the complete HRV and LOS analysis. Low amounts of this habitat limit the abundance of LOS associated wildlife species in the area, such as the northern goshawk,

flammulated owl, white-headed woodpecker, pygmy nuthatch, white-breasted nuthatch, and brown creeper.

The Moist Pvg

Large tree closed

Large tree open

Effects to LOS

Alternative 1

Because management activities would not take place under Alternative 1, there would be no direct effects to old growth and associated wildlife in the short term. In the absence of large scale disturbances, the Lower Joseph analysis area would continue to provide habitat for species associated with large trees, closed canopies, down logs, and snags.

Due to the high number of overstocked stands, there is an increased risk of insect infestation and mortality as well as increased susceptibility to disease as well as fire. Both standing and down fuels will continue to increase over time as trees die due to competition or insects. This would increase snags and down wood, which are beneficial to marten, goshawk and pileated woodpeckers, but could increase the severity of a wildfire, should one occur. Few large animals die in wildfires, but fires change habitats, and intense fires change habitat most dramatically (USDA Forest Service 2002). Effects from a stand replacing fire could convert wildlife habitat for MIS to an unsuitable condition.

Alternative 2 - Vegetation treatments throughout the project area have been designed to reduce fuel loadings and stand density, modify fire behavior and improve tree health.

. Effects to LOS from burning are reduced snags and logs, particularly those in the later stages of decay. Although some negative effects will occur, the wildlife and vegetation in this area evolved with fire as a frequent and common influence. Prescribed burning is done under more controlled conditions than wildfire so desirable results are more likely.

Single-storied late and old structure, in the dry and moist vegetation types, is underrepresented in the project area for old-growth associated species (Table 5). The proposed treatments intend to reduce tree competition and accelerate growth on remaining trees and move parts of the project area, mostly within the dry forest types, toward stands of large, mature ponderosa pine and Douglas/grand fir that are historically characteristic of these potential vegetation groups. Thinning harvests will help convert approximately 727 acres of dry OFMS habitat to dry OFSS habitat (Table 6).

Alternative 3

Connectivity of LOS Habitat

Existing Conditions

Maintaining connectivity between habitats, particularly late and old structured habitat, is important for numerous wildlife species to allow free movement, interaction of adults, and dispersal of young. Management direction pertaining to maintaining connectivity between late and old structured stands, in addition to designated old growth management areas, is provided by the Eastside Screens.

Eastside Screen direction is to maintain or enhance the current level of connectivity between LOS (OFMS/OFSS) stands and between all Forest Plan designated OGMAs (MA15) by maintaining stands between them. LOS stands and OGMAs need to be connected to each other inside the project area, as well as, to adjacent project areas, by at least two directions. Connectivity corridor stands should be those in which medium diameter or larger trees are common, and canopy closures are within the top one-third of site potential. Stand widths should be at least 400 feet wide at their narrowest point. If stands meeting this description are not available then the next best stands should be used for connections. The length of corridors between LOS stands and OGMAs should be as short as possible.

Harvesting is permitted in connectivity corridors if canopy closures are maintained within the top one-third of site potential. Based on an interpretation made on the Forest canopy closures are considered to be within the top one-third of site potential if canopy cover is maintained at or above 40% in the Dry Forest PVG, and 50% in the Moist Forest PVG..

Connectivity between MA-15 "allocated old growth" and late old structure (LOS) stands was assessed utilizing field reconnaissance, aerial photographs and GIS mapping. The current level of connectivity between MA-15 and LOS stands varies across the project area. Areas of non-forested vegetation in combination with past timber harvest and wildfires have created gaps of varying size across the project area. Several LOS stands are currently somewhat isolated by their adjacency to areas non-forested vegetation. Stands of more contiguous forest in the northern portion of the project area are currently well connected (Figure). Largely connectivity is through major riparian such as Swamp Ck and Davis Ck in the southern part of the project area. This connectivity discussion is pertinent to all wildlife species mentioned elsewhere in this Wildlife Specialist's Report, particularly those that utilize LOS habitat for any part of their life history. Pileated woodpecker, marten and their prey, goshawk and their prey, elk, and a variety of other vertebrates and invertebrates are affected by the level of connectivity between their source or preferred habitats.

The connectivity network was established based generally on stand boundaries and connects, to the extent possible, all LOS and MA-15 stands within and outside the project area according to direction in the Forest Plan Amendment #2.

Fighure 55 A: Existing Condition Canopy closure and stream network; B: Existing condition connectivity and LOS habitat

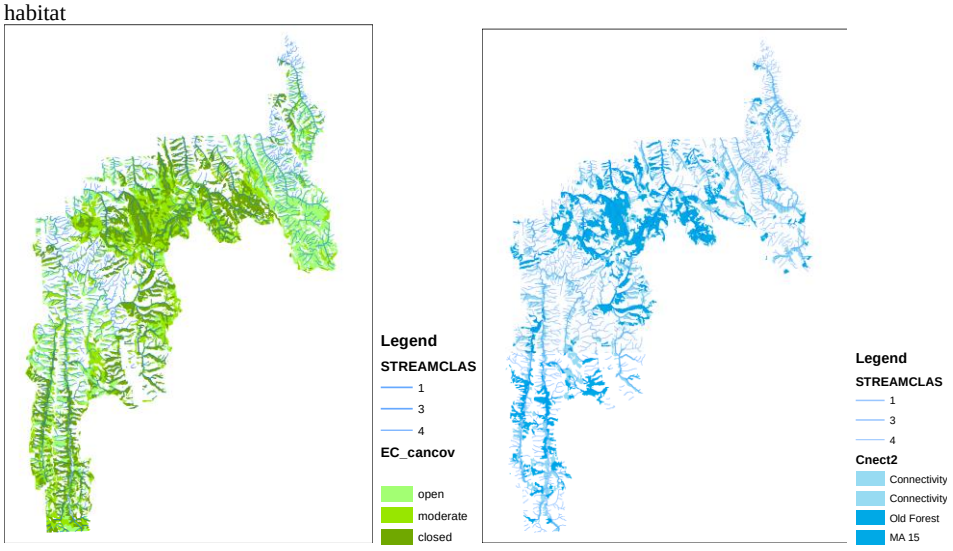
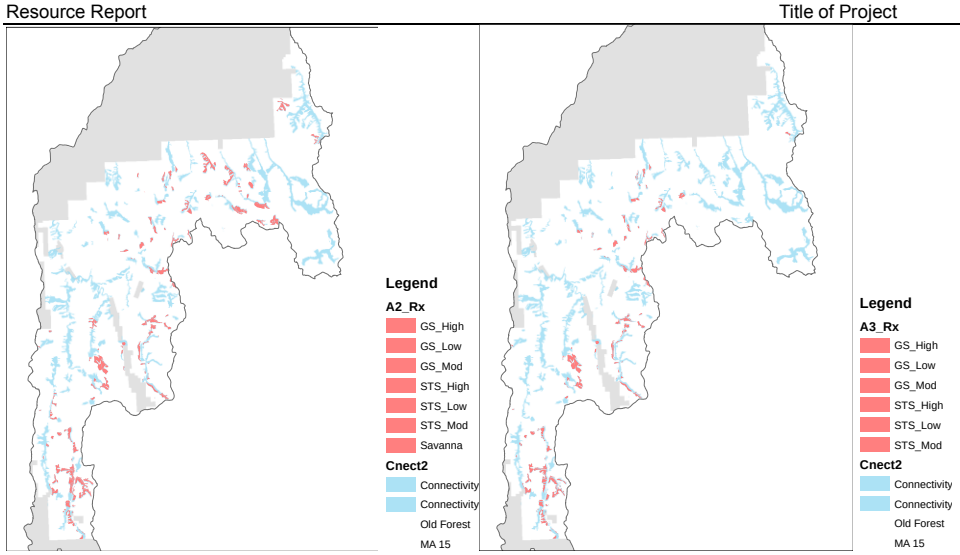


Figure 56 A: Alternative 2 commercial treatment areas of connectivity corridors; B – Alternative 3 commercial treatment areas within the connectivity corridors.


Legend
A2_Rx
GS_High
GS_Low
GS_Mod
STS_High
STS_Low
STS_Mod
Savanna
Cnect2
Connectivity
Connectivity
Old Forest
MA 15
Legend
A3_Rx
GS_High
GS_Low
GS_Mod
STS_High
STS_Low
STS_Mod
Cnect2
Connectivity
Connectivity
Old Forest
MA 15

Direct and Indirect Effects

This effects analysis focuses on the commercial silvicultural treatments which have the most potential to change the connectivity pattern across the landscape. Timber harvest is the primary activity that would reduce canopy closure and decrease structural complexity within treated stands. Other activities such as prescribed fire, non-commercial thinning can affect the quality and function of connective corridors, but to a much lesser degree than timber harvests. Also, the structural components effected by these less impacting activities can be replaced (grow back, recover) quickly relative to timber harvest. For example, non-commercial thinning and prescribed fire generally target the reduction of smaller diameter materials from forest duff to woody materials under 10" in diameter. An exception is prescribed fire which can consume all sizes of woody material, live and dead. Fire is an inexact tool, so there is the possibility that some larger woody structures will be consumed, and new ones created as trees are killed. However, prescriptions for fire are designed to retain the larger diameter woody materials, and consume smaller diameter materials.

Effects to Connectivity—Alternative 1

There will be no direct impacts to OGMAs, LOS habitat, or connectivity corridors under Alternatives 1. Indirectly, this alternative will forgo the opportunity to reduce the likelihood of a high intensity and/or stand-replacing fire through treatments. The current level of connectedness would persist, and would improve in quality in the absence of large scale disturbances. In the absence of silvicultural treatments that reduce tree stocking, the connective corridors will continue to increase in canopy closure and structural complexity. This condition in the moist upland forests would enhance connectivity for species like American marten. Although connectivity would be enhanced over time, risks from insects, diseases, and wild fire would increase.

Conversely, dry upland forests are inherently less structurally complex than cold and moist upland forests. In the absence of silvicultural treatments to reduce tree stocking, these stands would continue to allow the establishment of shade tolerant grand fir, increased canopy closure, and increased stress to competition for resources. In both the short and long-term (30+ years) these drier stands would be subjected to continued increased risks from wildfire, insects and diseases that would kill trees in numbers and distribution that could negatively affect connectivity between patches of dry LOS habitat. These negative effects could render the LOS and connective corridors unsuitable for some of the wildlife species that depend on them as habitat.

Alternative 2 and 3 will reduce the quality of connectivity corridors on X,XXXX, and XXxx acres respectively by reducing the canopy closure and structural complexity. Table Z compares the acres that are proposed for commercial treatments by alternative. The prescriptions in the proposed treatment units within the connectivity corridors have been modified provide canopy closure at >=40% in the Dry forest PVG, and >=50% in the Moist forest PVG. Although canopy closure and structural complexity may be reduced, these stands are expected to maintain the function and objectives of connectivity as described in the Eastside Screens. This level of tree stocking would reduce competition between residual trees, increase tree growth rates, and increase trees' ability to defend against insects and diseases, while retaining levels of canopy closure and structural complexity to facilitate movement of wildlife between LOS habitat patches.

Alternative 2 and 3 would allow for prescribed fire across much of the planning area, and XX and XX acres respectively of TSI treatments. Some snags and logs may be consumed by prescribed fire, while new snags and logs are recruited from fire killed trees. The burning, and non-commercial thinning, in connective corridors will not have a measurable negative effect on the quality or function of the corridors.

Area of Connectivity	Total Area (Acres)	Alt 1 Commercial Harvest	Alt 1 % Connectivity Harvested	Alt 2 No Harvest	Alt 2 Commercial Harvest	Alt 2 % Connectivity harvested	Alt 3 No Harvest	Alt 3 Commercial Harvest	Alt 3 % Connectivity harvested
Total	12,326	-	-	8,171	4,155	34	10,208	2,118	17
Dry PVG	9,829	-	-	6,307	3,522	36	8,093	1,736	18
Moist PVG	2,497	-	-	1,864	633	25	2,115	382	15

	Total Area	Alt. 1 Commercial Treatment	Alt. 1 % Area Treated	Alt. 2 Commercial Treatment	Alt. 2 % Area Treated	Alt. 3 Commercial Treatment	Alt. 3 % Area Treated
OGMAs (MA 15)							
Dry Forest PVG		0	0%				
Moist Forest PVG		0	0%				
LOS (OFMS, OFSS)							
Dry Forest PVG							
Moist Forest PVG							
Connectivity Corridors							
Dry Forest PVG		0	0%				
Moist Forest PVG		0	0%				

Cumulative Effects

Alternative 1 – The no action alternative will not contribute to cumulative effects. Any effects of forgoing silvicultural treatments and prescribed burning would occur later in time, and are addressed as indirect effects above.

Alternatives 2 and 3 - The reduction in connective habitat quality that results from silvicultural treatments will be relatively short lived as tree canopies respond to the reduced competition, and seedlings establish in response to increased sunlight reaching the forest floor. The quality of connective habitat in treatment units would likely recover to pre-treatment conditions within fifteen years. In the interim, the network of connectivity corridors that is not being treated, including many riparian areas, MA-15 areas, and the matrix of forested habitats will facilitate movement of LOS associated wildlife species between source habitat patches.

Alternative 3 would reduce the quality of connective corridors on XXX more acres than alternative 3. ,

This approach of addressing connectivity habitat is consistent with direction in the Regional Forester's Forest Plan Amendment #2 to retain canopy closure in the upper 1/3 of site potential, and other criteria that define connective corridors.

The incremental effects of prescribed burning, non-commercial thinning, and mechanical fuels reduction, would not compromise the quality or function of connective corridors.

Proposed, Threatened, Endangered, Sensitive Species (TES)

The list of federally-listed species applicable to the planning area was obtained from the U.S. Fish and Wildlife Service (USDI Fish and Wildlife Service 2011). No proposed or federally-listed terrestrial wildlife species were described for Wallowa County, Oregon. The USFS Region 6 Regional Forester's Sensitive Species List, dated January 31, 2011 (USDA Forest Service 2011) was reviewed for sensitive species potentially applicable to the Lower Joseph Project.

Existing condition

STATUS[1]	Species	Habitat within planning area	Alt 1	Alt 2	Alt 3	Rationale	Habitat Description
	AMPHIBIANS						
S	Rocky Mt tailed frog *Ascaphus montanus*	**K**	NI	NI	NI	Habitat protected by RHCAs	Rocky Mountain Tailed Frogs (*Ascaphus montanus)* are primarily nocturnal, and live in fast-flowing headwater streams in old-growth forests (Nielson et al, 2001). They occur in very cold, fast-flowing streams that contain large cobble or boulder substrates, little silt, and are often darkly shaded (Bull and Carter 1996).
S	Columbia spotted frog *Rana luteiventris*	**P**	NI	MIIH -	NI	Habitat protected by RHCAs	Columbia spotted frogs are highly dependent on aquatic habitats and require permanent and semi-permanent wetlands that have aquatic vegetation and some deeper or flowing water for overwintering (Bull and Marx 2002, Pilliod et al., 2002). The spotted frog frequents waters and associated vegetated (grassy) shorelines of ponds, springs, marshes, and slow-flowing streams and appears to prefer waters with a bottom layer of dead and decaying vegetation (Bull 2005).
	BIRDS						
S	Northern bald eagle *Haliaeetus leucocephalus*	**P**	NI	NI	NI	Habitat requirements not affected.	Bald eagles are highly dependent on riparian habitats. Nesting territories are normally associated with lakes, reservoirs, rivers, or large streams. In the Pacific Northwest recovery area the preferred nesting habitat for bald eagles is predominately uneven-aged, mature coniferous (ponderosa pine and Douglas-fir) stands or large black cottonwood trees along a riparian corridor (NatureServe 2012, USDI 1986).
S	American peregrine falcon *Falco peregrinus anatum*	**K**	NI	NI	NI	Habitat requirements not affected.	Peregrines are found in many terrestrial biomes in the Americas; none seems to be preferred (although perhaps greater densities in tundras and coastally). The most commonly occupied habitats contain cliffs, for nesting and generally open landscapes for foraging (Hayes and Buchanan 2002; Hays and Milner 2004)). A source of water, such as a river, lake, marsh or marine waters is typically in close proximity to the nest site and likely is associated with an adequate prey base of small to medium sized birds (Johnsgard 1990).
S	Black swift *Cypseloides niger*	**N**	-	-	-	No potential habitat	Black swifts nest on ledges or shallow caves in steep rock faces and canyons, usually near or behind waterfalls and typically inaccessible due to steep and vertical configuration (Levad et al. 2008). Black swifts breed in the Cascades of western Oregon, although only one definite breeding site has been identified (Marshall et al. 1996) and probably the Wallowa Mountains of northeastern Oregon (Gilligan et al. 1994).

S	Harlequin duck *Histrionicus histrionicus*	**N**	-	-	-	No potential habitat	The harlequin duck uses clear, fast-flowing rivers and streams for breeding and is able to move swiftly and with great agility in turbulent white water, diving to river bottoms to pick larval insects from rocky substrates (Roberston and Goudie 1999). Cassirer et al. (1996) describes breeding streams as reaches on streams with average gradients between 1% and 7%, with some areas of shallow water (riffles); clear water; rocky, gravel to boulder-size substrate; and forested bank vegetation.
S	Black rosy finch *Leucosticte tephrocotis wallowa*	**N**	-	-	-	No potential habitat	Black rosy finches as well as the Wallowa rosy finch generally breed in open, rocky areas above timberline, usually near snow fields or glaciers, talus, rockpiles, and cliffs (Johnson 2002, Macdougall-Shackleton et al. 2000). Nests are often found in rocky crevices located on cliffs (French 1959).
S	Columbian sharp-tailed grouse *Tympanuchus phasianellus columbianus*	**N**	-	-	-	No potential habitat	Columbian sharp–tailed grouse habitat is characterized by bunchgrass and shrub/bunchgrass rangelands in good ecological condition with at least 20% of the landscape in tall, deciduous shrub thickets provided by riparian zones, mountain shrub patches, and aspen stands (Giesen and Connelly 1993, McArdle 1977, Saab and Marks 1992). A total of 12 releases have resulted in translocation of 368 grouse from southeastern Idaho and northeastern Utah to Wallowa County, Oregon, since 1991. Grouse dispersed from the initial release site (Clear Lake Ridge) to the Leap Area north of Enterprise, OR.
S	Upland sandpiper *Bartramia longicauda*	**N**				No potential habitat	This species generally uses dry grasslands "with low to moderate forb cover, low woody cover, moderate grass cover, moderate to high litter cover, and little bare ground" (Dechant et al. 1999 (revised 2002)). The small and declining populations in mountain valleys and open uplands of NE Oregon (Union, Umatilla, Grant Cos.) are unusual because of altitude (1,035–1,585 m), use of sedge stands and of slightly elevated mounds in wet meadows, and location within 100 m of forest edge (Akenson 1991; Herman and Scoville 1988; Houston and Bowen 2001).
S	Greater sage grouse *Centrocercus urophasianus phaios*	**N**	-	-	-	No potential habitat	Sage-grouse are considered a sagebrush obligate species as virtually all studies of sage-grouse have identified the bird's dependence on large, woody sagebrushes (Artemisia spp.) for food and cover during all periods of the year (Connelly et al. 2004; Connelly et al. 2000; Dalke et al. 1963).
S	Lewis' woodpecker *Melanerpes lewis*	**P**	NI	BI	BI	Trend toward restoring habitat under Alt.'s 2,3	Three main habitats used by Lewis' woodpecker throughout its range are burned or logged areas, open ponderosa pine savanna at high elevations, and riparian woodland dominated by large cottonwoods at low elevations (Abele et al. 2004; Bock 1970; Saab and Dudley 1998; Saab and Vierling 2001; Tobalske 1997).
S	White-headed woodpecker *Picoides albolarvatus*	**P**	NI	BI	BI	Trend toward restoring habitat under Alt.'s 2,3	The white-headed woodpecker is associated with open-canopied ponderosa pine forests (Bull et al. 1986; Frederick and Moore 1991; Garrett et al. 1996; Kozma 2011). White-headed woodpeckers forage predominantly on large-diameter live ponderosa pine trees (Dixon 1995a) with pine seeds being the most important vegetable food item in Oregon (Bull et al. 1986, Dixon 1995a). In addition, these woodpeckers may use areas which have undergone various silvicultural treatments, including post-fire areas, if large-diameter ponderosa pines (alive or dead) and other old-growth components remain (Frenzel 2002; Raphael 1981; Raphael et al. 1987; Raphael and White 1984; Wightman et al. 2010).
	MAMMALS						

T	Canada lynx *Felix lynx canadensis*	**P**	NE	NE	NE	Highly unlikely to occur in this area	They are also found in isolated higher-elevation spruce, sub-alpine fir, and lodgepole pine forests in the western United States (Koehler and Brittell 1990; Ruediger et al. 2000). Habitat selection is associated with the habitat requirements of its primary prey, the snowshoe hare (Koehler and Aubry 1994). In general, mixed-conifer stands are often preferred by hares for cover with openings of shrubs for feeding. Lodgepole pine is often a major component of this habitat, especially within the early to mid-successional stages
C	North American wolverine *Gulo gulo luteus*	**N** -	- -	- -	- -	No potential habitat	Similar to other large mammalian carnivores in the Rocky Mountains (e.g., Ursus arctos, Canis lupus), the current distribution of wolverines may be more determined by intensity of human settlement than by biophysical factors such as vegetation type or topography (Kelsall 1981, Banci 1994, Carroll et al. 2001). Natal dens are typically above or near treeline, require snow depths of 1-3 meters that persist into spring, and are in close proximity to rocky areas such as talus slopes or boulder fields (Copeland 1996).
S	Gray wolf *Canis lupus*	**P**	NI	NI	NI	No known den sites within area	Habitat preference for the gray wolf appears to be more prey dependent than cover dependent. The wolf is a habitat generalist inhabiting a variety of plant communities, typically containing a mix of forested and open areas with a variety of topographic features (Mech et al. 1988; Mladenoff et al. 1999; Witmer et al. 1998).
S	Fringed myotis *Myotis thysanodes*	**N**	NI	MIIH	MIIH	Roost tree abundance potentially affected	Fringed Myotis (Myotis thysanodes) occurs from sea level to 2,850 m but is most common at middle elevations 1200 to 2,100 m. Although the fringed myotis is found in a wide variety of habitats including desert scrub, mesic coniferous forest, grassland, and sage-grass steppe its distribution is patchy and it appears to be most common in drier woodlands (oak, pinyon-juniper, ponderosa pine). They roost in crevices in buildings, underground mines, rocks, cliff faces, and bridges. Roosting in decadent trees and snags, particularly large ones, is common throughout its range in western U. S. and Canada.
S	Townsend's big-eared bat *Corynorhinus townsendii*	**N**	NI	NI	NI	Habitat requirements not affected.	Townsend's big-eared bats have been reported from sea level to 3,300 meters in a wide variety of habitat types including coniferous forests, mixed meso-phytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types (Piaggio and Sherman 2005; Kunz and Martin 1982). Distribution is strongly correlated with the availability of caves and cave-like roosting habitat, including abandoned mines (Sherwin et al 2000; Pierson et al 1999; Gruver and Keinath 2006).
S	Spotted bat *Euderma maculatum*	**P**	NI	NI	NI	Habitat requirements not affected.	According Chambers and Herder (2005) the spotted bat has been found from below sea level to 2700 m elevation and occurs from arid, low desert habitats to high elevation conifer forests. Prominent rock features appear to be a necessary feature for roosting. This species has been found in vegetation types that range from desert to sub-alpine meadows, including desert-scrub, pinyon-juniper woodland, ponderosa pine, mixed conifer forest, canyon bottoms, rims of cliffs, riparian areas, fields, and open pasture. Roost sites are cracks, crevices, and caves, usually high in fractured rock cliffs.
	INVERTEBRATES						

S	Johnson's hairstreak *Callophrys johnsoni*	**P**	MIIH	MIIH	MIIH	Majority of potential habitat unaffected	These butterflies occur within coniferous forests which contain the mistletoes of the genus *Arceuthobium*, commonly referred to as dwarf mistletoe. These plants are highly specialized and are known to occur on a number of different conifers (Schmitt and Spiegel 2008). Old-growth and late successional second growth forests provide the best habitat for this butterfly, although younger forests where dwarf mistletoe is present also supports *C. johnsoni* populations (Larsen et al. 1995; Miller and Hammond 2007, LaBonte et al. 2001). Older coniferous forests, especially those with a heavy component of western hemlock (*Tsuga heterophyla*) that are infected by dwarf mistletoe (*Arceuthobium tsugense*) appear to be its key habitat (Andrews 2010a, Miller and Hammond 2007, Larsen et al. 1995). In Washington, it is only know to occur west of the Cascade crest (Larsen et al. 1995). A disjunct population occurs at the Oregon/Idaho border in Baker and Union counties, Oregon and Adams County, Idaho . This disjunct population may be a relict population isolated by climate changes (Davis et al. 2011).
S	Intermountain sulphur *Colia Christina pseudochristina*	**P**	NI	MIIH	MIIH	Potential habitat	This species inhabits open woodland from 3400 to 5000 feet, including meadows, roadsides, and open forest and is most often found on steep sunny slopes at the ecotone between forest and shrubsteppe or grassland habitats (Foltz 2009). Hammond (*In* Foltz 2009) describes the subspecies habitat as sagebrush with scattered Ponderosa Pine, including both south- and east-facing slopes. The larvae of this subspecies feed on *Lathyrus* species, including *L. brachycalix*, *L. lanzwertii*, *L. puciflorus*, and. *L. nevadensis* (Foltz 2009). The Asotin County population in Washington was reported to feed on *L. puciflorus* (*reviewed in* Warren 2005). Adults of *C. christina* use a variety of plants as nectar sources, and males may occasionally be seen frequenting mud puddles (Warren 2005).
S	Silver-bordered fritillary *Boloria selene*	**N**	-	-	-	No potential habitat	The silver-bordered fritillary inhabits open, boggy, wet meadows (Miller and Hammond 2007) and true bogs which support violets (*Viola* spp.) usually located within low- to mid-elevation forests (Larsen et al. 1995). Open riparian areas and marshes containing a large amount of Salix and larval food plants also provide habitat (Warren 2005). Caterpillar host plants consist of violets, including pioneer violet (*Viola glabella*) and northern bog violet *V. nephrophylla*, (Pyle 2002). Adult nectar plants are composite flowers including goldenrod (*Solidago* spp.) and black-eyed Susan (*Rudbeckia* spp.).
S	Western bumblebee *Bombus occidentalis*	**P**	MIIH	MIIH	MIIH	Potential habitat	Suitable habitat includes typically associated with sub-alpine meadows, coastlines, and high elevation valleys.
S	Yuma skipper *Ochlodes yuma*	**N**	-	-	-	No potential habitat	*O. yuma* is found around reed beds in and around freshwater marshes, streams, oases, ponds, seeps, sloughs, springs, and canals (Larsen et al. 1995, Opler, et al. 2013). Adults are almost always found in close association with the primary larval host plant *Phragmites australis* (common reed).
S	Fir pinwheel *Radiodiscus albietum*	**P**	NI	MIIH	NI	Harvesting in RHCAs may impact	The fir pinwheel (*Radiodiscus abietum*) is a land snail that is generally found in moist, rocky, forested terrain. Most often found in moist and rocky Douglas-fir (*Pseudotsuga menziesii*) forest at mid-elevations in valleys and ravines (Frest and Johannes 1997). At some Montana locations, Western Red Cedar (*Thuja plicata*) formed the canopy (Hendricks 2003). Moist sites are preferred and tend to be near permanent water, such as riparian corridors but outside the flood plain, and in dense conifer forests where there is more precipitation, litter and decaying wood (Hendricks 2003).

Common Name	Family (is there a better, more descriptive heading for lay readers?)	Group (is there a better, more descriptive heading for lay readers?)
white-headed woodpecker	Medium/Large Trees	Dry Forest
fringed myotis	Open Forest	All Forest Communities
Lewis's woodpecker	Open Forest	Post-Fire Habitat
peregrine falcon	Human Disturbance	Habitat Generalist
grey wolf	Human Disturbance	Habitat Generalist
Townsend's big-eared bat	Chambers/Caves	Chambers/Caves
spotted bat	Woodland/Grass/Shrub	Woodland/Grass/Shrub
Rocky Mountain tailed frog	Riparian	Conifer Riparian
bald eagle	Riparian	riparian/large tree or snag/open water
Columbian spotted frog	Riparian	Pond/Small Lake/Backwater

Comment [ayn1]: Barb

Migratory Birds

Migratory birds are those that breed in the U.S. and winter south of the border in Central and South America. Many of our well known passerine songbirds, flycatchers, vireos, swallows, thrushes, warblers, and hummingbirds, fall in this category. Most others are included in the resident category. Birds are a vital element of every terrestrial habitat in North America. Conserving habitat for birds will therefore contribute to meeting the needs of other wildlife and entire ecosystems.

Conditions within the Planning Area

Vegetation of the Northern Rocky Mountains has changed dramatically in the last 150 years since European settlement of the region. Primary changes have been the loss of old forest habitat due to intensive timber harvesting, and the degradation of habitats (e.g., ponderosa pine forest, riparian) from a number of factors including fire suppression, over-grazing, invasion of exotic vegetation, and human development. The loss and alteration of historic vegetation communities has impacted landbird habitats and resulted in species range reductions, population declines, and some local and regional extirpations.

Trends

The Breeding Bird Survey (BBS) (Robbins et al. 1986) is the primary source of population trend information for North American landbirds. However, it only has data for the last 30 years, and extensive habitat changes occurred prior to that time which undoubtedly affected bird populations, but for which there are no quantitative data. Attempts to assess the extent of bird population changes prior to the BBS have been documented through an examination of historical habitats at the time of European settlement (approximately 1850) and knowledge of bird species habitat relationships (Wisdom et al. in press). There is one BBS Physiographic Region within the geographic boundaries of this conservation strategy - ***Central Rocky Mountains***. This BBS physiographic region occurs mostly outside of Oregon and Washington, including parts of Idaho, Montana, and Colorado. Thus, BBS population trend estimates should be viewed cautiously because they may not reflect populations in Blue Mountains of Oregon and Washington.

BBS Significantly Declining Trends -Rocky Mountain physiographic province

Ruffed Grouse (L)
Olive-sided flycatcher (L)
Dark-eyed junco (R)
Brown creeper (L,R)
Mountain chickadee (R)
Townsend's solitaire (R)
Common snipe (R)
Calliope hummingbird (R)
Red-eyed vireo (L,R)
Yellow warbler(L)
Kildeer(R)
Mourning dove (L)
American kestrel (R)
Black-billed magpie (L)
Barn swallow (R)
Tennesee warbler (R)
Bobolink (R)
L= long-term trend (1966-1998); R= recent trend (1980 – 1998), species identified in red do not occur within the planning area and will not be addressed further.

PIF Bird Conservation Plans:
The Oregon and Washington Chapter of PIF was formed in 1992 and has since developed a series of publications aimed at assisting private, state, tribal and federal agencies in managing for landbird populations.

Five avian conservation plans have been developed by PIF covering the various geographic regions found in Oregon and Washington. These documents have been prepared to stimulate and support a proactive approach to the conservation of landbirds throughout Oregon and Washington. Recommendations included in the documents are intended to inform planning efforts and actions of land managers, and stimulate monitoring and research to support landbird conservation. They also serve as a foundation for developing detailed conservation strategies at multiple geographic scales to ensure functional ecosystems with healthy populations of landbirds.

The plans can be found on the OR-WA PIF web site at **www.orwapif.org.** The Plan reviewed and incorporated for this project is: *Conservation Strategy for Landbirds in the Rocky Mountains of Eastern Washington and Oregon*

PIF Bird Conservation Regions (BCR'S) - Bird Conservation Regions (BCRs) are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. BCR's are a hierarchical framework of nested ecological units delineated by the Commission for Environmental Cooperation (CEC). The overall goal of these BCR's are to accurately identify the migratory and resident bird species (beyond those already designated as federally threatened or endangered) that represent our highest conservation priorities by ecoregions. BCR lists are updated every five years by the US Fish and Wildlife Service. The BCR that is within the planning area is BCR 10 the Northern Rocky Mountain's.

In December, 2008, the U.S. Fish and Wildlife Service released *The Birds of Conservation Concern Report* (BCC) which identifies species, subspecies, and populations of migratory and resident birds not already designated as federally threatened or endangered that represent highest conservation priorities and are in need of additional conservation actions.

While the bird species included in *BCC 2008* are priorities for conservation action, this list makes no finding with regard to whether they warrant consideration for Endangered Species Act (ESA) listing. The goal is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions. It is recommended that these lists be consulted in accordance with *Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds."*

The following Table lists the birds of conservation concern for the Northern Rockies BCR. The Conservation Strategies for Landbirds in the Northern Rocky Mountains of Eastern Oregon and Washington, as well as the Fish and Wildlife Service (FWS) BCC species list for the project area were reviewed and incorporated into this analysis (BCC 2008).

Birds of Conservation Concern BCR 10 (Northern Rockies U.S. portion only)
Bald Eagle (b)
Swainson's Hawk
Ferruginous Hawk
Peregrine Falcon (b)
Flammulated Owl
Black Swift
Calliope Hummingbird
Lewis's Woodpecker
Williamson's Sapsucker
White-headed Woodpecker
Olive-sided Flycatcher
Willow Flycatcher (c)
Cassin's Finch
Upland Sandpiper
Long-billed Curlew
Yellow-billed Cuckoo (w. U.S. DPS) (a)
Loggerhead Shrike
Sage Thrasher
Brewer's Sparrow
Sage Sparrow
McCown's Longspur
Black Rosy-Finch

Figure 1: (a) ESA candidate, (b) ESA delisted, (c) non-listed subspecies or population of Tor E species, (d) MBTA protection uncertain or lacking, (nb) non-breeding in this BCR. Those species hi-lighted in red are not known to occur, nor is habitat present within the planning area, and will not be addressed further

Common Name	Breeding Bird Survey (BBS) - declining trends	Bids of Conservation Concern (BCC)	Forest Service Sensitive	**Habitat Group 1**	**Habitat Group 2**	Habitat description
Brown creeper	BBS (L,R)			Cool/Moist Forest	Medium/Large Trees	In the Pacific northwest prefers late successional stages of moist coniferous forests with high canopy cover.
Cassin's Finch		BCC		All Forest Communities	Medium/Large Trees	Open, mature coniferous forests of lodgepole and ponderosa pine, aspen, alpine fir, grand fir and juniper steppe woodlands
Williamson's Sapsucker		BCC		All Forest Communities	Medium/Large Trees	E. Cascades, mid to high elevation, mature open and mixed coniferous - deciduous forests. Snags are a critical component.
Mountain chickadee	BBS '(R)			All Forest Communities	Medium/Large Trees	Occurs in coniferous forests. Forage high in the canopy and in larger trees.
Ruffed Grouse	BBS (L)			All Forest Communities	Medium/Large Trees/ MOSAIC	Mosaics of dense cover and openings, riparian areas.
White-headed Woodpecker		BCC	Sensitive	Dry Forest	Medium/Large Trees	Nesting habitat consists of open-canopy stands with mature and overmature ponderosa pine.
Flammulated Owl		BCC		Dry Forest	Medium/Large Trees	Associated with ponderosa pine forests and mixed conifer stands with an open canopy, open understory with dense patches of saplings or shrubs.
Calliope hummingbird	BBS ('R)	BCC		All Forest Communities	Open Forest	Predominantly a montane species found in open shrub sapling seral stages (8-15 years) at higher elevations and riparian areas.
Townsend's solitaire	BBS ('R)			All Forest Communities	Open Forest	Breeds in and near open coniferous forest stands, natural forest openings, burned areas, shelterwoood cuts and clearcuts.
Dark-eyed junco	BBS ('R)			All Forest Communities	Open Forest	Forages and nests on or close to the ground and is associatded with foret openings and patches of early seral vegetation.
American kestrel	BBS ('R)			Post-Fire Habitat	Open Forest	Wide variety of open to semiopen habitats, including meadows, grasslands, deserts, early successional communities, open parkland, agricultural fields. Suitable nest trees and perches required.
Olive-sided flycatcher	BBS (L)	BCC		Post-Fire Habitat	Open Forest	Open conifer forests (< 40 % canopy cover) and edge habitats where standing snags and scattered tall trees remain after a disturbance.
Lewis's Woodpecker		BCC	Sensitive	Post-Fire Habitat	Open Forest	Primary habitats include open ponderosa pine, riparian cottonwood, and logged or burned pine.
Peregrine Falcon		BCC	Sensitive	Habitat Generalist	Human Disturbance	Wide range of habitats, nests on cliff ledges, bridges, quarries. Suitable nesting habitat consists of cliffs, usually within 900 meters of water (Pagel 1995)

Ferruginous Hawk		BCC		Woodland/Grass /Shrub	Woodland/Grass/ Shrub	Occupy habitats with low tree densities and topographic relief in sagebrush plains of the high desert and bunchgrass prairies in the Blue Mtns.
Mourning dove	BBS (L)			Woodland/Grass /Shrub	Woodland/Grass/ Shrub	Habitats range within open forests and clearcuts, grass, shrub, juniper-steppe, agriculture and agricultural areas.
Black-billed magpie	BBS (L)			Woodland/Grass /Shrub	Woodland/Grass/ Shrub	Habitats typified by open country, ranch and agricultural lands, juniper woodlands, sagebrush steppe, and open meadows and riparian thickets.
Swainson's Hawk		BCC		Woodland/Grass /Shrub	Grassland	Found in open country with no need for numerous trees prefer prairies and irrigated farmland with high prey densities.
Killdeer	BBS ('R)			Woodland/Grass /Shrub	Grassland	Open areas with short and/or sparse vegetation or bare ground.
Black Swift		BCC	Sensitive	Riparian	Waterfall	Nests on ledges or shallow caves in steep rock faces and canyons, usually near or behind waterfalls and sea caves. Forage over forests and open areas in montane habitats.
Bald Eagle		BCC	Sensitive	Riparian	Riparian/lg tree or snag/open water	Associated with large bodies of water, forested areas near the ocean, along rivers, and at estuaries, lakes and reservoirs.
Willow Flycatcher		BCC		Riparian	Shrubby/Deciduous Riparian	Associated with riparian shrub dominated habitats, especially brushy/willow thickets. In SE WA also found in xeric brushy uplands.
Red-eyed vireo	BBS(L,R)			Riparian	Shrubby/Deciduous Riparian	Riparian forests consisting of large black cottonwood, or other decidious species with understories of chokecherry, willow, alder, hawthorn, and hackberry.
Yellow warbler	BBS (L)			Riparian	Shrubby/Deciduous Riparian	Riparian woodlands paricularly those dominated by willow or cottonwood,
Barn swallow	BBS ('R)			Riparian	Shrubby/Deciduous Riparian	Breeding habitat usually contains open areas (fields, meadows) for foraging, nest site that includes a vertical or horizontal substrate (often enclosed) underneath some type of roof or ceiling, and a body of water that provides mud for nest-building
Common snipe	BBS ('R)			Wetland	Marsh/Wet Meadow	Wet meadows, marshes, of sedge or grass, cattail marsh edges or riaprian bogs.

Effects Analysis

Road-associated factors that negatively affect some species of migratory and resident birds include: snag and log reduction, habitat loss and fragmentation, negative edge effects, harassment or disturbance, collisions, displacement or avoidance, and chronic negative interactions with humans (Penninger 2009).

Alternative 1: In the absence of large scale disturbances, alternative 1 would provide long-term habitat for migratory birds at the same level that exists today. HRV for Dry; HRV for Moist Old vs early; closed vs Open:

Forest fuels would continue to accumulate as fuel reduction treatments are deferred. Alternative 1 would perpetuate and contribute further to increased fuel accumulations, increasing the risks to overstory trees when wildfires occur. Depending the species and the scale and intensity of a wildfire, some species habitats may be improved (e.g. white-headed woodpecker), while other species habitats may be reduced (e.g. Williamson's sapsucker).

Alternative 2 and 3: Effects from this project to migratory birds would be variable depending the species. Alternative 2 will harvest more acres than alternative 3. Therefore, canopy cover will be reduced more, large trees will be harvested, snag will be reduced more, and riparian areas will be altered.

Road densities will be reduced more in alternative 2 which will likely benefit all of these migratory birds. Road-associated factors that negatively affect some species of migratory and resident birds include: snag and log reduction, habitat loss and fragmentation, negative edge effects, harassment or disturbance, collisions, displacement or avoidance, and chronic negative interactions with humans (Penninger 2009).

There will be no new system road construction in the project area and all logging access roads will be closed with earthen berms, waterbars, or rehabilitated (scarified, seeded, scattered with debris) after the project is completed. Native seed mixes will be used where available and none of the seed will be treated with herbicides or fungicides.

Prescribed fires conducted during the nesting season are more likely to result in high mortality of nestlings, especially for ground, shrub and small tree nesting species (Smith 2000). Prescribed fire conducted prior to the nesting season in the early spring, may reduce nesting habitat for ground- and shrub-nesting species (Artman et al. 2001).

In the short-term, some nesting habitat may be lost because of logging and burning, but the scale at which it will occur is not expected to significantly reduce migratory bird richness or abundance. Some birds may experience shifts in home ranges as habitat is altered, but treatments will not result in their complete displacement from the project area. The short-term losses of relatively abundant, early-nesting species, such as the dark-eyed junco, may be a necessary tradeoff for the effective restoration of dry forests. Such losses may be further justified if populations of other species, such as the flammulated owl, white-headed woodpecker, and pygmy nuthatch, ultimately benefit from such restoration. While the long-term overall shift in forest structure would favor species dependent on open canopied forests, this is the type of forest historically characteristic of much of the project area and is important to migratory specices of conservation concern. Open forest stands would likely support a diversity of shrubs and grasses that some migratory birds depend on. A mosaic of forest and rangeland conditions capable of supporting breeding migratory bird populations will exist if the project is implemented. There is no indication that habitat changes from the project would result in reduced numbers of these birds that would be meaningful at local or landscape scales.

Common Name	Habitat Group 1	Habitat Group 2	Exisitng Condition/Alternative 1	Alternative 2 and 3
Brown creeper	Cool/Moist Forest	Medium/Large Trees	These habitats are currently at the low end of the RV. Habitat would be provided at the same level that currently exists.At the lanscape scale, the risk to uncharacteristic fire which would remove habitat for this species would continue to increase.	Prescribed harvest prescriptions are to maintain habitat abundance though the quality of the habitat in the short-term may be reduced due to loss of canopy cover. Alternative 2 proposes to harvest more habitat for species in this group than Alternative 3.Not harvesting within the RHCAs in Alternative 3 will benefit this species habitats. At the landscape scale, the risk to uncharacteristic fire which would remove habitat for this species would be reduced.
Cassin's Finch	All Forest Communities	Medium/Large Trees	Medium/large tree habitat (>15" dbh) is overall within the RV. In relation to the RV, moist forests are low in closed canopied conditions, while dry forests are low in open canopied conditons. Alternative 1 would provide habitat at existing conditions. Snag habitat would remain unchanged. Shrubby understory habitats would likely remain suppressed in particularly in the dry forests. At the lanscape scale, the risk to uncharacteristic fire for this species would continue to increase ; these species would likely respond negatively to wildfire depending on the intensity.	Prescribed harvest prescriptions would reduce the canopy closure, the density of medium size trees, and the density of snags. Alt. 2 will reduce the density of large trees. Habitats or species associated with open canopies and/or shrubby understories especially in the dry forests will increase and will move closer to the RV. For species associated with closed canopies, habitat will be reduced. Alt. 2 will reduce the canopy closure, and snags on more acres than alternative 2. At the landscape scale, the risk to uncharacteristic fire would be reduced. A large scale and high intensity disturbance, would likely remove habitat for these species.
Williamson's Sapsucker	All Forest Communities	Medium/Large Trees		
Mountain chickadee	All Forest Communities	Medium/Large Trees		
Ruffed Grouse	All Forest Communities	Medium/Large Trees/ MOSAIC		
White-headed Woodpecker	Dry Forest	Medium/Large Trees	Habitats for these species are below the RV. Snag habitat would not be reduced. Alt. 1 would provide habitat at the same minimal level as current. At the landscape scal, the risk to uncharacteristic fire would continue to increase. A lower intensity or mixed severity fire may create source habitat for white-headed woodpeckers.	Prescribed harvest prescriptons would reduce canopy closure, the density of medium size trees, and the density of snags. Alt. 2 would reduce the density of large trees on XXXXX acres in dry forests. The reduction of canopy will benefit these species. The loss of snags will decrease the quality of the habitat. Alt. 2 will increase the potential habitat for these species on more acres than Alt. 3. Large trees and snags will be reduced on more acres in Alt. 2 than Alt 3. At the landscape scale, the risk to uncharacteristic fire would be reduced. Depending the scale and intensity of a disturbance, habitat may be created or reduced. Post-fire habitat can provide habitat for white-headed woodpeckers.
Flammulated Owl	Dry Forest	Medium/Large Trees		
Calliope hummingbird	All Forest Communities	Open Forest	In relation to the RV, moist forests with medium and large trees and forests of early structure (<10") is low in the abundance of open canopied forests. Open-canopied habitats in dry forests are all below hrv. Alt. 1 would not change the current amount of habitat that overall is likely reduced. At the landscape scle the risk to uncharacteristic wildfire or disturbance would remain high. Lower intensity disturbance, may provide habitat for some of these species, especially the Townsend's solitaire.	Prescribed harvest will reduce canopy and likely increase habitat for these species. Likely shrub habitat will increase benefitting the Calliope hummingbird. Alt. 2 will recude canopy on more acres than Alt. 3, likely improving habitat for these species more. At the landscape scale, the risk to uncharacteristic fire would be reduced. Depending the scale and intensity of a disturbance, habitat may be created or reduced. Post-fire habitat can provide habitat forTownsend's solitaire.
Townsend's solitaire	All Forest Communities	Open Forest		
Dark-eyed junco	All Forest Communities	Open Forest		

American kestrel	Post-Fire Habitat	Open Forest	Post-fire habitat is currently below the RV. Under Alt. 1 source habitat abundance would not be changed. At the landscape scle the risk to uncharacteristic wildfire or disturbance would remain high. High and moderate intensity/scale wildfire would likely increase habitat for these species.	In both Alt. 2 and 3, approximately XX acres of forests that were within the Cache ck fire perimiter (2012?) (currently provide some post-fire habitat) would be harvested, large trees may be removed and snags would be reduced likely reducing the quality of habitat for these species. At the landscape scale, the risk to uncharacteristic fire would be reduced. These species are associated with post-fire conditions at a variety of scales and intensities.
Olive-sided flycatcher	Post-Fire Habitat	Open Forest		
Lewis's Woodpecker	Post-Fire Habitat	Open Forest		
Peregrine Falcon	Habitat Generalist	Human Disturbance		
Ferruginous Hawk	Woodland/Grass/Shrub	Woodland/Grass/Shrub	Prescribed fire is the only proposed activity planned in these habitats, in Alt. 1, no prescribed fire would occur. At the landscape scale the risk to uncharacteristic wildfire would continue to increase. Depending the scale and intensity of such a disturbance, the quality of these habitats could be improved or reduced.	Prescribed fire may occur on these habitats in Alt. 2 and 3. Timing and the sizing and spacing of prescribed fire could…..
Mourning dove	Woodland/Grass/Shrub	Woodland/Grass/Shrub		
Black-billed magpie	Woodland/Grass/Shrub	Woodland/Grass/Shrub		
Swainson's Hawk	Woodland/Grass/Shrub	Grassland		
Killdeer	Woodland/Grass/Shrub	Grassland		
Black Swift	Riparian	Waterfall	Habitats for these species would remain a the same level. Particularly in dry forests, canopy closure is above the RV and may be suppressing shrub development in some riparian areas. At the landscape scale the risk to uncharacteristic fire would continue to increase. Likely, in the short-term following a wildfire, habitat for these species would be reduced. In the longer-term wildfire may increase shrubs and habitats for some of these species.	In Alt. 2 proposed activities in these habitats include harvest in XXXX acres of category 4 RHCA's. Additionally in Alt. 2 there are XX acres of harvest prescribed has meadow restoration in category 1 rhca in Swamp Ck. Harvest in RHCA's may increase or decrease habitat for these species depending the species. In the immediate short-term, important shrubby understories may be reduced (if present) but in the longer term these understories may flourish more than if not harvested. Prescribed fire.....
Bald Eagle	Riparian	Riparian/lg tree or snag/open water		
Willow Flycatcher	Riparian	Shrubby/Deciduous Riparian		
Red-eyed vireo	Riparian	Shrubby/Deciduous Riparian		
Yellow warbler	Riparian	Shrubby/Deciduous Riparian		

Barn swallow	Riparian	Shrubby/Deciduous Riparian	
Common snipe	Riparian/Wetland	Marsh/Wet Meadow	

CUMULATIVE EFFECTS

Past timber sales, fires, roads, grazing, and prescribed burns have modified and converted migratory bird habitat in the project area. Past logging has led to the current lack of old, big trees in the area due to selective harvesting, and was likely detrimental to species that depended on contiguous conifer cover and avoided forest edges. Grazing has modified understory fuels and fire supression has interrupted historic fire return intervals. Consequently, many stands are now overstocked with young trees and are vulnerable to insects, disease, and wildfire. An extensive roads network built to facilitate timber operations has had a long-term impact on the area and continues to provide access for recreationists, hunters, permittees, woodcutters, and others.

This project should not contribute to cumulative effects because project treatments would begin to shift the project area towards the overall long-term goal of increasing open-canopied late and old structure (LOS) habitat by removing smaller trees so that larger ones can grow. Treatments are designed to promote the desired growth of large trees. Prescribed fire is designed to maximize retention and protection of large diameter live trees, snags, and logs. There will be no increase in open road density (ALT 3?). A mosaic of forest and rangeland conditions capable of supporting breeding migratory bird populations will exist if the project is implemented.

There is no indication that habitat changes from the project would result in reduced numbers of migratory birds that would be meaningful at local or landscape scales. Grazing is an ongoing activity in the project area. While grazing does not affect forest canopies, shrub and grass habitats can be altered by vegetation removal which leads to reduced structural diversity. A simplification of the vegetation likely causes a shift to generalist species (Knopf 1996). Grazing should not affect migratory bird shrub or grass habitat because grazing according to LRMP standards should leave adequate shrub and grass cover, and is designed to allow for normal recovery rates that do not delay regeneration. There are no reasonably foreseeable future activities that may impact migratory birds or their habitat in the project area.

Cumulative Effects on Neotropical Migrants

Alternative 1: The no action alternative would not contribute to the cumulative effects of past and present activities. Past timber management activities including regeneration harvest, commercial thinning, precommercial thinning and salvage have resulted in fewer mature and old growth stands, with fewer large trees and large snags. Additionally recreation, wood cutting and roads have led to a reduction in snag habitat in some areas. Grazing has modified understory fuels and fire supression has interrupted historic fire return intervals. Fire suppression has resulted in increased densities of primarily smaller trees.

Alternative 2 and 3: Past timber sales, fires, roads, and prescribed burns have modified and converted NTMBS habitat in the Lower Joseph analysis area. Past logging has led to the reduction of large trees in the area due to selective harvesting, and was likely detrimental to species that depended on contiguous conifer cover and avoided forest edges, but favored species that utilize dense shrubs and early seral forest habitat. Grazing has modified understory fuels and fire supression has interrupted historic fire return intervals. Consequently, many stands are now overstocked with

young trees and are vulnerable to insects, disease, and wildfire. An extensive roads network built to facilitate timber operations has had a long-term impact on the area and continues to provide access for recreationists, hunters, permittees, woodcutters, and others.
This project should not contribute to cumulative effects because project treatments would begin to shift the project area towards the overall long-term goal of moving toward RV for tree size, tree species, and canopy closure.

Burning plans are designed to maximize retention and protection of large diameter live trees, snags, and logs.
Open road densities would be reduced in alternative 2 and generally maintained in alternative 3.
A mosaic of forest and rangeland conditions capable of supporting breeding NTMBS populations would exist if either action alternative is implemented.

There is no indication that habitat changes from the project would result in reduced numbers of any particular NTMBS that would be meaningful at local or landscape scales. Grazing is an ongoing activity in the project area.

While grazing does not affect forest canopies, shrub and grass habitats can be altered by vegetation removal which leads to reduced structural diversity. A simplification of the vegetation likely causes a shift to generalist species (Knopf 1996).

There are no reasonably foreseeable future activities that may impact NTMBS or their habitat in the project area.

Grazing has modified understory fuels and fire supression has interrupted historic fire return intervals. Consequently, many stands are now overstocked with young trees and are vulnerable to insects, disease, and wildfire. An extensive roads network built to facilitate timber operations has had a long-term impact on the area and continues to provide access for recreationists, hunters, permittees, woodcutters, and others.

This project should not contribute to cumulative effects because project treatments would begin to shift the project area towards the overall long-term goal of increasing late and old structure (LOS) habitat by removing smaller trees so that larger ones can grow. Treatments retain the old-growth component of the area and promote the desired growth of large trees. Burning plans are designed to maximize retention and protection of large diameter live trees, snags, and logs, and there will be no increase in open road density. A mosaic of forest and rangeland conditions capable of supporting breeding migratory bird populations will exist if the project is implemented.

Analysis Tools and Surveys

Species presence/absence determinations were based on habitat presence, past wildlife surveys, recorded wildlife sightings, the Oregon Natural Heritage Information Center wildlife sightings database (2008), scientific literature, and status/trend and source habitat trend documented for the Forest Plan Revision (Wales et. al 2013).

Vegetation analysis and estimates of stand conditions were completed using silviculture analysis tables, results described within the Lower Joeseph Vegetation Management Report, aerial photo interpretation, vegetation database, and/or ground reconnaissance.

Analysis Methodology

Alternative 1, the No Action Alternative, is required by NEPA. It is used as a benchmark to compare and describe the differences and effects between taking no action and implementing action alternatives. The No Action Alternative is designed to represent the existing condition; resource conditions are then projected forward in time to estimate resource changes expected in the absence of the proposed management activities.

Effects on species will be determined by assessing how the No Action Alternative and action alternatives affect the structure and function of vegetation relative to current and historical distributions. Some wildlife habitats require a detailed analysis and discussion to determine potential effects on a particular species. Other habitats may either not be impacted or are impacted at a level which does not influence the species or their occurrence. The level of analysis depends on the existing habitat conditions, the magnitude and intensity of the proposed actions, and the risk to the resources.

Past, ongoing and foreseeable future activities used in cumulative effects analysis are listed in the **FEIS, Appendix B**. Where the species' cumulative effects analysis area is larger than the two subwatersheds encompassing projects listed in Appendix B, other sources are used to quantify these activities.

Incomplete and Unavailable Information

The existing condition is described for each species, group of species, or habitat. Direct, indirect and cumulative effects of alternatives are identified and discussed. Incomplete or unavailable information, scientific uncertainty, and risk are disclosed where applicable.

Management Direction

Management direction for the planning area is found in the Land and Resource Management Plan for the Wallowa-Whitman National Forest (Forest Plan; 1990). The management areas (MA) within the Lower Joseph project area are:

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Forest Plan Management Areas

Forest Plan Management Areas for the Lower Joseph project are in Figure_LOJO_Management Areas (p.xx). Recreation Standards and Guidelines for these Management Areas include;

Table XX - Forest Plan Management Areas (MA) Direction

Management Areas	Applicable Wildlife Direction
1- Timber production emphasis	**2**. Wildlife Maintain at least 30 percent of the forest land within a project area (such as a timber sale) as cover, including both marginal and satisfactory cover. In addition, in timber sale planning, attempt to achieve a habitat effectiveness index of 0 *5* or greater where this can be done without reducing timber harvest volumes Other adjacent areas which provide cover, such as riparian areas, old-growth (MA 15) or backcountry (MA 6) will be considered in this calculation. **13**. Manage the transportation system on that portion of Management Area 1 within the identified elk winter range as described in Management Area 3, including limiting open road density to 1 ***5*** miles per square mile
3 - Wildlife/Timber Winter Range	**3**. Wildlife. Vegetation manipulation (precommercial thinning, regeneration harvest, and overstory removal) which converts a site from satisfactory or marginal cover to a forage status will be designed so that Summer Range - At least 80 percent of the treated area is 1) within 600 feet of a satisfactory or marginal cover patch at least 6 acres in size, and 2) within 900 feet of a satisfactory cover patch at least 40 acres in size Winter Range -At least 80 percent of the treated area is within 600 feet of a satisfactory cover patch at least 40 acres in size. **8.** In general, roads **left** open year long on summer ranges will be limited to 1.5 miles per square mile although in some areas local conditions will necessitate higher densities In some instances, less than 1 5 miles per square mile will be feasible.
7 - Wild and Scenic Rivers	**7**. Wildlife Apply Forest-wide standards and guidelines.
12 - Research Natural Area	2. Wildlife. Prevent the introduction of non-native species.
15 – Old growth habitat	2. Wildlife Select alternative stands in instances where monitoring or project inventories indicate that stands allocated as old growth in this plan are not truly in an old growth condition Minor changes of this nature will generally be considered nonsignificant changes to this plan 3. Additional snags may be created if designated old growth stands are lacking necessary snags, but otherwise meet the old growth definition.

	Use the following definition in monitoring old growth and in identifying replacement stands as needed: **4.** An old-growth stand is defined as any stand of trees ten acres or greater generally containing the following Characteristics Ponderosa pine -The stands will contain at least ten mature to over-mature trees per acre with ponderosa pine or juniper representing **75** percent **of** the overstory canopy level. Stem size will be 21 inches or greater in the overstory tree layer. Broken-topped trees may be present Ponderosa pine bark will be furrowed and platy with color ranging from orange to yellow A minimum of one standing snag, **21** inches or larger, per acre and at least 5 tons of down material including three logs per acre (greater than 9 inches) will **be** present Douglas-fir, white fir, spruce - These stands include both intolerant and tolerant species The stands will contain at least 15 trees per acre 21 inches or more in diameter, two snags and at least five tons of down material including three downed logs per acre (greater than 9 inches in diameter) Broken-topped trees may be present 5. Provide a 300-acre pileated woodpecker feeding area within 0 7 miles of any designated old-growth patch (MA 15) approximately 300 acres or larger This will normally be a contiguous block although it may be arranged in blocks of 50 acres or larger not more than 0 25 miles apart Within these feeding areas, maintain at least two hard snags ten inches dbh or larger per acre 6. Locate pileated feeding areas in areas such as wilderne'ss, MA 6, or other areas without scheduled timber harvest, when available. 7. Reevaluate old-growth stands each planning period to determine whether or not they still meet old growth criteria When an old-growth stand no longer meets the criteria, select a new stand, returning the original stand to whatever management area surrounds it 8.Select replacement stands from sites having similar character, to the extent practical

Table XXX - Forest Plan Management Areas (MA) and Direction for the area within the HCCMP:

Management Areas	Applicable Recreation Standards & Guidelines
9 - HCNRA Dispersed Recreation/Native Vegetation	
10 – HCNRA Forage Production (16,373 acres)	
11 – HCNRA Dispersed Recreation/Timber Management (16,181 acres)	

Regulatory Framework

Land and Resource Management Plan

Wallowa-Whitman Land and Resource Management Plan (Forest Plan 1990)

The Lower Joseph project is consistent with the Forest Plan (1990) including the 1995 Regional Forester's Eastside Forest Plan Amendment #2. In addition to meeting standards and guidelines for water quality (see effects to aquatic habitat discussion), the proposed activities are consistent with all Forest Plan Wildlife standards and guidelines including:

- **Insect and Disease S&G-1. Integrated Pest Management.**

Use integrated Pest Management (IPM) strategies for early detection, suppression and prevention of Forest pests and to manage pests within the constraints of laws and regulations. IPM strategies include manual, mechanical, cultural, biological, chemical, prescribed fire, and regulatory means.

- **Threatened, Endangered and Sensitive Species.**

  Goal: To protect and, manage habitat for the perpetuation and recovery of plants and animals which are listed threatened, endangered, or sensitive. (A list of these species can be found in the Forest Plan EIS.) To assure that management activities do not jeopardize the continued existence of sensitive species or results in adverse modification of their essential habitat.
- **Threatened, Endangered and Sensitive Species. S&G-1** Reviews/Biological Evaluations. Review all actions and programs, authorized, funded, or carried out by the Forest Service, to determine their potential effects on threatened, endangered and sensitive species. Conduct these reviews, including biological evaluations, per direction in FSM 2670 and appropriate R-6 manual supplements.
- **Wildlife S&G-1. Riparian and Old Growth.** Manage riparian and old growth habitat consistent with Forest Service Manuals 2500 and 2600. Where natural stream characteristics permit, the management, (as described in *Managing Riparian Ecosystems (Zones) for Fish and Wildlife in Eastern Oregon and Eastern Washington*), would provide for 60-100 percent shade on live streams, 80 percent or more total lineal distance of streambank in stable condition, limiting fine inorganic sediment covering stream substrate to 15 percent, and 80 percent or more of the potential grass-forb, shrub and tree cover. Maintain old growth to meet old growth wildlife species needs.
- **Wildlife S&G-2.** Give preferential consideration to resources such as fish, certain wildlife and vegetation, and water which are dependent upon riparian areas over other resources in actions within or affecting riparian areas.
- **Wildlife S&G-4.** Manage timber stands in riparian areas to provide habitat for snag-dependent wildlife species at not less than 60 percent level of the optimum habitat, (including snags of all sizes), as described in Wildlife Habitats in Managed Forests (Thomas, 1979).
- **Wildlife S&G-7. Snag Management.** Maintain at least the 20 percent level (the management requirement level) of snags 10 to 20 inches in diameter wherever higher levels are not specified and where doing so would not conflict with the primary management area objective. Exceptions include:
  a. Management Area 16 (Administrative and Recreation Sites).
  b. Management Area 17 (Utility Corridors) if use of the corridor for its designated purpose requires clearing of vegetation.
  d. Areas where catastrophic mortality such as from fire, disease, or insect epidemic precludes the leaving of green replacement trees
  e. Areas where harvest is occurring to treat an inset or disease situation and leaving green replacement trees would significantly reduce the effectiveness of the treatment.
- **Wildlife S&G-13. Dead and Down Material.** Provide dead and down woody material to meet habitat requirements for those species of wildlife, insects, fungi, and other microscopic plant and animal species associated with this type of habitat. Actions to provide this habitat may include such things as leaving one or more concentrations of slash per acre for small mammals and ground-nesting birds, leaving unmerchantable logs on-site in various stages of decay, and activities needed to protect this debris to prescribed fire and fuel wood cutting.
- **Wildlife S&G-14. Raptor Nest Sites.** Protect all raptor nest sites in use. Protect other nesting sites, important roosting, or special foraging habitats where it can be accomplished without adversely affecting long-term timber production or unreasonably complicating timber sale preparation and related activities. Such means could include adjustments in unit boundaries, operating seasons, or harvest scheduling.
- **Watershed S&G-17.** Address in all project environmental analyses the presence of, and potential impacts to, any wetlands within the project area. Particular attention would be paid to **protection of springs** during road locations, timber sale plan, and range allotment management plans. Adverse impacts to wetlands would be avoided or mitigated.
- **Wildlife S&G-18. Unique habitats.** Avoid alteration of unique habitats such as cliffs and talus slopes. Decisions to alter or disturb these habitats would only be made following site-specific NEPA analysis including identification of suitable mitigation measures. Springs are also considered unique habitats.

- **Wildlife S&G-20. Indian Treaty Rights** Recognize the hunting and fishing rights of the Indian tribes in habitat management activities.
- **Regional Forester's Eastside Forest Plan Amendment #2.**

  Ecosystems Standards (Screen 2). 2A the following are not subject to the Ecosystem Standards, Historical Range of Variability (HRV) analysis, but MUST APPLY Wildlife Standards:

  1) Pre-commercial thinning sales;
  2) sales of material sold as fiber;
  3) sales of dead material less than 7-inches dbh, with incidental green volume, (reference RO 2430 letter, 8/16/93);
  4) salvage sales, with incidental green volume, located outside currently mapped old-growth (reference letter RO 2430, 8/16/93).
  5) commercial thinning and understory removal sales located outside currently mapped old-growth.

  Wildlife Standards (Screen 3) Scenario A: If either One or BOTH of the LOS FALLS BELOW HRV in a particular biophysical environment. DO NOT ALLOW timber sale harvest activities to occur within LOS stages that are below HRV.

  3) a) Maintain connectivity and reduce fragmentation of LOS stands by adhering to the following standards:

     1) Connect these LOS and old-growth habitats with each other in contiguous network pattern by at least two different directions;
     2) A connectivity corridor stand is one which medium diameter of larger trees are common, canopy closures are within the top 1/3 of site potential, stand width is at least 400 foot wide at the narrowest point;
     3) Connectivity corridors should be as short as possible;

  4) Harvesting within connectivity corridors is permitted if all criteria in (2) above can be met.

  b) Reduce fragmentation of LOS stands, or at least, do not increase it from current l levels. Stands that do not currently meet LOS that are located within, or surrounded by, blocks of LOS stands should not be considered for even-aged regeneration, or group selection at this time.

Hells Canyon National Recreation Area Comprehensive Management Plan (2003)

Section 7 of the HCNRA Act
The Secretary shall administer the recreation area in accordance with the laws, rules, and regulations applicable to national forests for public outdoor recreation in a manner compatible with the following objectives:

4) protection and maintenance of fish and wildlife habitat;

HCNRA CMP (2003) Wildlife Habitat

Forested areas in the HCNRA provide late/old structure (25%) for forest-associated species. The HCNRA will be managed as a healthy ecosystem that is an integral component of a larger bioregion. Managing for all structural stages, including late/old, will achieve functional old-growth habitat for associated species.
The decision establishes objectives to protect and maintain wildlife habitat.

- **WLD-S1:** Administer HCNRA for public outdoor recreation in a manner compatible with the protection and maintenance of wildlife habitat and populations. (New)
- **WLD-S2:** Protect, enhance, and manage wildlife habitat for the recovery of wildlife that are federally listed as threatened, endangered, or sensitive. Inventory the occurrence and distribution of threatened and endangered species. (Forest Plan)
- **WLD-S3**: Locate, monitor, and protect nesting, roosting, and feeding areas for bald eagles. Develop nest site plans for new nests within two years of discovery. (New)
- **WLD-S4:** Protect Townsend's big-eared bats from negative human-caused disturbance by managing access at the entrances of caves and mines. (Forest Plan)

- **WLD-S5:** Identify and map late/old structure in MAs 7, 10, and 11 and track its extent and distribution through time. Identify and maintain connectivity between late/old structure. Refer to Table C-10: Interim Definitions for Old Growth (Region 6). (New)
- **WLD-S6:** In MAs 7, 10 and 11, identify late/old structure replacement stands and develop a management strategy (during project-level planning) to maintain or move stands toward late/old structure conditions as needed to maintain this component within the HRV. (New)
- **WLD-S7:** Maintain open-road densities for all 61 subwatersheds at or below 1.35 mi./sq. mi., except subwatershed 9L, which would be maintained at or below 1.9 mi./sq. mi. open road densities. (New)
- **WLD-S8:** Prevent the spread of diseases from domestic sheep to wild sheep by maintaining separation of the two species. Vacant allotments would not be stocked with domestic sheep unless a vaccine or other technique is found that eliminates the incompatibility. (New)
- **WLD-G1:** Build and manage gates for Townsend's big-eared bats at the entrance of each cave or mine tunnel that is negatively affected by human-caused disturbance. Gates will be set back to comply with visual concerns. (New)
- **WLD-G2:** Cave and mine shafts used for hibernation should be identified and protected from human-caused disturbance from November 1 to April 1, each year. (New)
- **WLD-G3:** Maternity colonies for Townsend's big-eared bats should be identified and protected from human-caused disturbance from May 1 to August 15. (New)
- **WLD-G4:** Known habitat areas for Townsend's big-eared bats should contain buffers of uninterrupted canopy (brush or trees) of 100 feet, where possible. (New)
- **WLD-G5:** Outside Wilderness, maintain a diversity of wildlife habitats by providing a variety of structural stages for each plant association arranged in a mosaic across the landscape. (New)
- **WLD-G6:** Identify and monitor potential wolverine natal den sites. If active natal den sites are found, restrict human use near these sites from January through May. (New)

- **WLD-G7:** Maintain large refugia (greater than 10,000 acres) with low human-caused disturbance for wolverine, fisher, pine marten, lynx, wolf, and other forest carnivores benefitting from large undisturbed areas. (New)
- **WLD-G8:** Identify blocks of late/old structure at least 900 acres each to provide habitat for associated species (Bull and Holthausen 1993). (New) (Typo: WLD-G9 page C-129 in Appendix C HCNRA CMP)
- **WLD-G9:** Maintain elk and deer habitat to meet the current management objective levels, unless adjusted by the Oregon Fish and Wildlife Commission. Work cooperatively with ODFW on future management objective revisions. The current management objective are (ODFW 1994): (New)
  Snake River: 4,200 elk, 15 bulls, 40 calves; 6,400 deer, 15 bucks, 70 fawns
  Pine Creek: 400 elk, 15 bulls, 45 calves; 2,500 deer, 15 bucks, 70 fawns
  Chesnimnus: 3,500 elk, 10 bulls, 40 calves; 3,600 deer, 15 bucks, 70 fawns
  Imnaha: 800 elk, 15 bulls, 40 calves; 5,300 deer, 15 bucks, 70 fawns
  (bull, calves, bucks, fawns are per 100 cows/does).
- **WLD-G10:** Outside Wilderness, actively manage habitat for big-game herds to assist the States of Oregon and Idaho and the Nez Perce Tribe in reaching population objectives, bull and buck escapement, and calf and fawn ratios. Continue to recover bighorn sheep through participation with the restoration of Bighorn Sheep to Hells Canyon, the Hells Canyon Initiative (Hells Canyon Bighorn Sheep Restoration Committee 1997). (New)
- **WLD-G11:** Ensure the long-term maintenance of healthy populations of native landbirds by implementing the biological objectives in the Landbird Conservation Strategy (Partners in Flight 2000 as updated). (New) (Typo: WLD-G8 page C-131 in Appendix C HCNRA CMP)
- **WLD-G12:** Evaluate, and where appropriate, re-establish, and/or enhance populations of indigenous wildlife species. The appropriate mechanism is to reach joint agreement, through an MOU with the appropriate fish and wildlife state agencies. (New)
- **WLD-G13:** Manage recreational livestock use to minimize the potential for transmission of harmful domestic animal diseased to wildlife. (New)

Wild and Scenic River Management Plan (1993)

Wildlife (Outstandingly Remarkable Value) Desired Future Condition:

The desired future condition for this resource is an increase and then a stable population of bighorn sheep within the lower Imnaha River corridor. Over time, quality habitat is maintained or increased for all wildlife. No reduction in wildlife Proposed Endangered Threatened and Sensitive species habitat or population.

Manage existing and proposed populations of wild bighorn sheep within the river corridor according to the Forest Plan.

Table 5. Eastside Screens requirements

Eastside Screens Element
DETERMINE HRV: • describe the dominant historical disturbance regime • characterize the landscape pattern and abundance of structural stages maintained by the disturbance regime • describe spatial pattern and distribution of structural stages under the HRV disturbance regime • map the current pattern of structural stages AND calculate their abundance by biophysical environmental setting
CHARACTERIZE the proposed timber sale and its associated watershed for patterns of stand structure by biophysical environment within a watershed and compare to the Historic Range of Variability (HRV).
Scenario A: WHERE either late/old structure (LOS), single story, or multi-story falls BELOW HRV, NO NET LOSS of LOS from that biophysical environment**.**
DO NOT ALLOW timber sale harvest activities to occur within LOS stages that are BELOW HRV.
Some timber sale activities can occur WITHIN the LOS Multi-story stages that are AT or ABOVE HRV in a manner to MAINTAIN or ENHANCE LOS within that biophysical environment. It is ALLOWABLE to manipulate one type of LOS to move stands into the LOS stage that is DEFICIT (LOS multi to LOS single), if this meets historical conditions.
OUTSIDE LOS, many types of timber sale activities are ALLOWED. The intent is still to maintain and/or enhance LOS components in stands subject to timber harvest as much as possible, by adhering to the following standards:
MAINTAIN ALL remnant late and old seral (LOS) and/or structural live trees > 21" DBH that currently exist within stands proposed for harvest activities;
MANIPULATE vegetative structure that does not meet LOS conditions, in a manner that moves it towards these conditions as appropriate to meet HRV
MAINTAIN open, park-like stand conditions where this condition occurred historically. Manipulate vegetation in a manner to encourage the development and maintenance of large diameter, open canopy structure.
Maintain or enhance the current level of connectivity between LOS stands and between all Forest Plan designated old-growth habitats by maintaining stands between them.
CONNECT these LOS and old-growth habitats with each other in a contiguous network pattern by at least two different directions;
Connectivity corridors should be as SHORT as possible
A connectivity corridor stand is one which MEDIUM diameter or larger trees are COMMON, canopy closures are within the TOP 1/3 of SITE POTENTIAL, stand WIDTH is at least 400 feet wide at their narrowest point;
Harvesting within connectivity corridors IS PERMITTED IF, all criteria in the above element can be met (*maintained during harvest*).
Reduce fragmentation of LOS stands, or at least, DO NOT INCREASE it from current levels. Stands that do not currently meet LOS that are located within, or surrounded by, blocks of LOS stands SHOULD NOT be considered for even-aged regeneration harvest, or group selection at this time.
All sale activities WILL MAINTAIN snags and GTR trees of > 21" DBH, at 100% potential population levels of primary cavity excavators;
Pre-activity down logs may be removed only when they exceed the quantities listed below: Species — Pieces/acre — Diameter — Piece size and total feet Ponderosa pine — 3-6 — 12” — > 6' and 20-40 ft. Mixed conifer — 15-20 — 12" — > 6' and 100-140 ft. Lodgepole pine — 15-2 — 8" — > 8' and 120-160 ft.
These down log criteria are NOT INTENDED TO PRECLUDE the use of prescribed fire. Consumption WILL NOT EXCEED 3" total of diameter reduction in the featured large logs.
Leave logs in current lengths, DO NOT CUT them into pieces. Longer logs may be counted for multiple "pieces" without cutting them.
Maintain 2.25 snags per acre, AFTER all post-sale activities are completed, to meet the 100% level. It is up to the line officer to determine if more are needed and this decision should be disclosed within the NEPA document.
Follow the following goshawk requirements. Protect known active and historically used goshawk nest sites. Harvest is prohibited in the 30 acres surrounding active and historical goshawk nest sites. Establish a 400-acre post fledging area around every active nest site.

Eastside Screens Element
Scenario B: If the single story LOS stage is within or exceeds HRV within a watershed, or if both LOS single and multi-story are within or exceed HRV, then harvest can occur within these stages as long as LOS conditions do not fall below HRV. Enhance LOS structure and attributes as possible.
Harvest activities can occur in order of the following three priorities: (a) within stands OTHER THAN LOS (b) within smaller, isolated LOS stands less than 100 acres in size, and/or at the edges of large blocks of LOS stands (> 100 acres) (c) Within the interior of large LOS stands (> 100 acres)
MAINTAIN connectivity as directed in SCENARIO A.
Non-fragmentation Standards - within the interior of large LOS stands > 100 acres, harvest activities ARE LIMITED TO non-fragmenting prescriptions (i.e., thinning, single-tree selection, salvage, understory removal, and other non-regeneration activities). GROUP SELECTION IS ONLY ALLOWED when openings created either mimic the natural forest pattern, and/or DO NOT EXCEED one-half acre in size.
ADHERE to the specific wildlife prescriptions for SNAGS, GREEN TREE REPLACEMENTS, and DOWN LOGS, as described in SCENARIO A.
Follow SCENARIO A, with the following EXCEPTION for goshawk post fledging areas in 5) (c): A 400 acre "post fledging area" will be established around every active nest site. While harvesting activities can occur within this area, up to 60% of the area should be retained in LOS conditions, (i.e., if 35% of the area is now in LOS stands, then it all needs to be retained; if 75% of the area is now in LOS stands, then some can be harvested, as long as this late and old stand structure does not drop below 60% of the area).

Management Area

List applicable Management Areas, MA direction, land management prescriptions and other land allocations pertaining to your resource.

Special Area Designations

Describe special area designation as applicable, or delete this heading.

Federal Law

Regulatory Framework

The three principle laws relevant to wildlife management are the National Forest Management Act of 1976 (NFMA), the Endangered Species Act of 1973 (ESA), and the Migratory Bird Treaty Act (MBTA) of 1918 (as amended). Direction relative to wildlife is as follows:

- NFMA requires the Forest Service to manage fish and wildlife habitat to maintain viable populations of all native and desirable non-native vertebrate wildlife species and conserve all listed threatened or endangered species populations (36 CFR 219.19).
- ESA requires the Forest Service to manage for the recovery of threatened and endangered species and the ecosystems upon which they depend. Forests are required to consult with the US Fish and Wildlife Service if a proposed activity may affect the population or habitat of a listed species.
- MBTA established an international framework for the protection and conservation of migratory birds. This Act makes it illegal, unless permitted by regulations, to "pursue, hunt, take, capture, purchase, deliver for shipment, ship, cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird."

Forest Service Manual (FSM) direction provides additional guidance: identify and prescribe measures to prevent adverse modifications or destruction of critical habitat and other habitats essential for the conservation of endangered, threatened and proposed species (FSM 2670.31 (6)).

The Forest Service Manual also directs the Regional Forester to identify sensitive species for each National Forest where species viability may be a concern. Under FSM 2670.32, the manual gives direction to analyze, if impacts cannot be avoided, the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole.

The principle policy document relevant to wildlife management on the Forest is the Wallowa-Whitman Land and Resource Management Plan (USDA Forest Service 1990), referred to as the LRMP for the remainder of this analysis. The LRMP provides standards and guidelines for management of wildlife species and habitats. Standards and guidelines are presented at the Forest level (LRMP, pp. 4-18 to 4-56) or Management Area level (LRMP pp. 4-56 to 4-98).

The 1995 Regional Forester's Eastside Forest Plan Amendment #2 (Eastside Screens) amended Forest Plans for the National Forests in Eastern Oregon and Eastern Washington, including the Wallowa-Whitman National Forest. Amendment # 2 established interim wildlife standards for old growth, old growth connectivity, snags, large down logs, and northern goshawks. The Regional Forester has periodically distributed letters clarifying direction in Amendment #2 (Regional Forester, October 2, 1997; October 23, 1997; and June 11, 2003).

Additional management direction is provided for the conservation of migratory landbirds. This direction is consolidated in the Forest Service Landbird Strategic Plan and further developed through the Partners in Flight Program. The Oregon-Washington Partners in Flight Conservation Strategy for Landbirds in the Rocky Mountains of Eastern Oregon and Washington (Altman 2000) identifies priority habitats, and focal species and habitats for the Blue Mountains of Oregon.

Executive Orders

Executive Order 13186 (66 Fed. Reg. 3853, January 17, 2001)
"Responsibilities of Federal Agencies to Protect Migratory Birds"
This Executive Order directs federal agencies to avoid or minimize the negative impact of their actions on migratory birds, and to take active steps to protect birds and their habitat. This Executive Order also requires federal agencies to develop *Memorandum of Understandings (MOU)* with the FWS to conserve birds including taking steps to restore and enhance habitat, prevent or abate pollution affecting birds, and incorporating migratory bird conservation into agency planning processes whenever possible. The FS has completed, and is currently implementing, their MOU with the FWS.

Forest Service & FWS MOU:
The purpose of this MOU is, *"to strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and avoid or minimize adverse impacts on migratory birds through enhanced collaboration between the Parties, in coordination with State, Tribal, and local governments."*

Under the MOU the FS Shall:
Address the conservation of migratory bird habitat and populations when developing, amending, or revising management plans for national forests and grasslands, consistent with NFMA, ESA, and other authorities listed above. When developing the list of species to be considered in the planning process, ***consult the current (updated every 5 years) FWS Birds of Conservation Concern, 2008 (BCC), State lists, and comprehensive planning efforts for migratory birds****. Within the NEPA process, evaluate the effects of agency actions on migratory birds, focusing first on species of management concern along with their priority habitats and key risk factors.*

State and Local Law

Recreational Hunting
The Oregon Department of Fish and Wildlife regulates hunting in the Snake River, Imnaha, and Pine Creek Big-Game Management Unit through controlled hunts which requires a hunting tag.

Other Agencies and Individuals Consulted

List other agencies and individuals consulted and provide a summary of what information they provided. Delete if not

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